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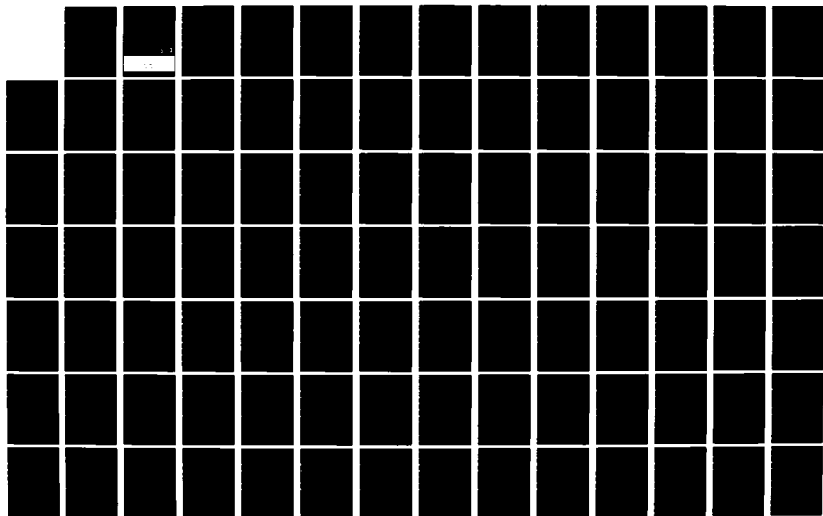
IMPLEMENTATION PLAN FOR DATA COLLECTION REDUCTION AND  
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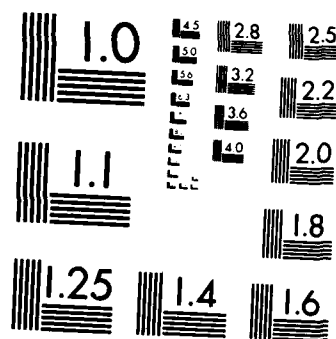
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IMPLEMENTATION PLAN FOR DATA COLLECTION,  
REDUCTION, AND ANALYSIS IN SUPPORT OF THE  
AUTOMATED TECHNICAL CONTROL (ATEC)  
JOINT OPERATIONAL TEST AND  
EVALUATION PROGRAM (JOT&E)

ADA 128791

Prepared for  
U.S. AIR FORCE COMMUNICATIONS SERVICE  
Richards-Gebaur AFB, Missouri

Under  
CONTRACT NO. F23613-74-C-0014 TASK 75-18  
(SUBTASK D)

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X will be reusable on any Government WWMCCS computer system. The software will be divided into two basic functions: verification of input, and data processing. The verification of input software will be written in a higher order language. The processing software will utilize the WWDMS data management software routines and the Honeywell version of the BDM statistical software routines. Both software packages are standard on any Government WWMCCS computer system.



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**COMPUTER SCIENCES CORPORATION**

**6565 Arlington Boulevard  
Falls Church, Virginia 22046**

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## SECTION 1 - INTRODUCTION

The purpose of this Implementation Plan is to provide for the collection, storage, and processing of data gathered by the ATEC Test Team. The Plan is a result of an analysis of the JOT&E Test Plan, Annex A, discussions with AFCS personnel, and observations made during a December 1975 visit to the Federal Republic of Germany.

Section 2 discusses input data collection. Included are types of data to be collected, collection method, and examples of the data.

Section 3 discusses output requirements. A list of identified outputs is presented and sample outputs are included.

Section 4 discusses implementation of data input collection and output generation. Included are methods of implementing data collection, data storage and transportation, security considerations, a discussion of available hardware and software, processing required, and data base structure and requirements.

Appendix A is a listing of representative AFTEC and DCEC forms, with recommended card input formats. This appendix has been developed with the assistance of the Test Team, AFCS, and AFTEC.

Appendix B is an extract from Honeywell BMD documentation showing sample data outputs.

The salient feature of this plan is that the software developed will be reusable on any Government WWMCCS computer system. The software involved can be divided into two basic functions: verification of input and processing.

The verification software will be written in a higher order language (HOL). The processing software will utilize the WWDMS data management software routines and the Honeywell version of the BMD statistical software routines. Both software packages are standard on any Government WWMCCS computer system.

The combination of HOL verification software and WWMCCS standard software routines make the implementation totally transportable.

## SECTION 2 - INPUT DATA REQUIREMENTS

There are six main categories of data required for input to the data base.

They are:

1. AFTEC JOT&E Data Forms
2. DCEC Modified JOT&E Forms
3. ATEC Parameter Data
4. Outage Reports
5. Maintenance Data
6. Circuit Directory Data.

The requirements for (1) are taken directly from the JOT&E Test Plan, while the requirements for (2) through (6) are derived from discussions with the test team analyst, DCEC Personnel, and from 1815 Test Squadron message 070545Z Oct 75. In this message, a preliminary attempt was made to formulate a data base structure using these inputs. This message and subsequent discussions identified the following breakout of the data base. The acronym SMART was coined by the test team to identify the data base elements, and is included to facilitate correlation with the referenced message. The data base elements were defined as:

1. Directory, by site, of links, trunks, and VF and DC circuits (SMART-0A)
2. Maintenance data from MDC files in Rhein Main computer system (SMART-0B)
3. Circuit outage tickets and other OPS data (SMART-0C)
4. Parameter data from ATEC equipment (SMART-0D).

These elements are required to satisfy OT&E objectives, DT&E requirements, and to provide management information. The management information is required to provide an overview of the system. It will indicate how the system is changing, if at

all, and where best to perform certain types of tests. These reports have been grouped under the general category of "Measure of Effectiveness," and the report forms are discussed in Section 3.

This raw data is currently in one of three forms:

1. Paper - JOT&E test forms, OPS data, TCF files, Army MDC forms, and DCS circuit and trunk directories.
2. Punched paper tape - Parameter input data from ATEC equipments (I/OQCS, DDMS, MTS, etc.)
3. Magnetic tape - MDC files from 1945 Comm Squadron.

The following paragraphs specify a methodology for converting the raw data to formats for implementation into the data base.

## 2.1 AFTEC REPORTS AND FORMS

The individual objectives of the Joint Operational Test and Evaluation (JOT&E), Automated Technical Control Program (ATEC) Test Plan dated October 1975 have been reviewed with respect to their adaptability to Automatic Data Processing (ADP). To meet the desired objectives, the Test Plan called for use of over 100 forms for the collection of data. A major effort was undertaken to standardize input cards to minimize the number of different entry formats. As a result of this investigation, the required number of input data card formats has been reduced to eight. The reduction in the number required is the result of utilizing the same entry card for a number of forms with differences in the data field filled in or left blank by the key-punch operator.

Figures 2-1, 2-2, and 2-3 depict, respectively, a typical AFTEC data form; card format into which the data is placed for entry into the data base; and instructions as to how the data is to be implemented onto the card. Similar format and instruction forms have been generated for every AFTEC form suitable for ADP. These are assembled into Appendix A of this Plan for quick accessibility and reference.

[illegible]

Oct 1975

2-3



AFTEC FORM NO. 143		CARD NO. B	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
NUHI/LKF	A	Site	See Table A3 for Site Codes
	B	ATE Type	
Link No.	D	Link Number	Code P Item 4 MTS(PM) Code Q Item 5 I/OQCS Code N Item 6 NSS Control Note: If test mode is manual do not use the field Direct Transfer
	H	Test Mode	
Manual (or PM) DTG Start	K	DTG Start	Code A Indicates times and measurements on this card are automatic Code M Indicates times and measurements on this card are manual See Table A5 for Instructions See Table A5 for Instructions
	N	DTG Stop	
Test Channel PJ	O	Measurement Data	Direct Transfer
Test Channel FR	P	Measurement Data	Direct Transfer
PM or Manual PJ	T	Measurement Data	Direct Transfer
PM or Manual FR	U	Measurement Data	Direct Transfer
	V	Control	Code B Item 78 Card ID Code G Item 79 Form ID Item 80 Not Used

Figure 2-3. Data Transferral - AFTEC Form 143

Test Plan objectives were analyzed utilizing a matrix in which the data collection forms were aligned against their ADP adaptability. The results are assembled in Tables 2-1, 2-2, and 2-3. In these tables, the FORM column always indicates an AFTEC form unless indicated otherwise.

The CARD NO. column cross-references or correlates to Appendix A where the entry card formats are found. The letter appearing in the column denotes the input data card format to be used with that particular data form. If the form is not adaptable to ADP, the REMARKS column explains or presents relevant information in clarifying this decision.

The following are analyses by annexes of the JOT&E Test Plan.

#### 2.1.1 Annex A

Most of the data forms in Annex A are adaptable to ADP. There are a few questions on some of the forms as to the meaning of the information required and some forms should contain additional data to make them more complete.

Those forms classified as unsuitable for ADP are done so because the report can be generated automatically from the data base.

#### 2.1.2 Annex B

Annex B consists of three appendices:

- Appendix 1 - Logistics Supportability Test Procedures
- Appendix 2 - Reliability/Maintainability Plan
- Appendix 3 - Reliability/Maintainability Data Reduction and Analysis Plan.

An analysis was performed on Appendices 1 and 3. Appendix 2 requires no data forms as it contains only duties and responsibilities for monitoring the JOT&E and for collecting the R/M data.

Table 2-1. Annex A Matrix

JO1&E		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.1.1.1	A-54	Evaluate the ability of technical controllers to set required alarm thresholds in the ATEs (IQCS, I/OQCS, DDMS, MSMS).	None	--	--	
2.4.1.1.2	A-55	Verify that the in-service automatic scanning capability of the IQCS, I/OQCS, DDMS and MSMS enhances the ability of the technical controller to accomplish the performance monitoring tasks.	125	Yes	A	
2.4.1.1.3	A-58	Evaluate the capability of the IQCS and the I/OQCS to enhance the technical controller's ability to maintain level discipline.	126	No	--	Format and Report can be generated automatically from data contained in data base.
2.4.1.1.4	A-61	Evaluate the usefulness of the ATEs in accomplishing the DCA performance program.	127	No	--	Format and Report can be generated automatically from data contained in data base.
2.4.1.1.5	A-63	Evaluate the usefulness of the MSMS in enhancing the technical controller's capability to accomplish performance monitoring of VFCT systems.	128	Yes	B	
2.4.1.1.6	A-65	Evaluate the effectiveness of using the OQCS to accomplish parameter testing required for DCA S3 circuits as defined in DCAC 310-70-1. (If successful, this will ensure the ability of the I/OQCS to accomplish parameter testing of all lower grade circuits.)	129	Yes	B	
2.4.1.1.7	A-68	Evaluate the extent to which the BBSA aids the local technical controller and maintainer in accomplishing baseband sweeps.	130	Yes	B	Form should contain the site information.
2.4.1.1.8	A-70	Evaluate the utility of the MTS alarm reporting system (MAD and ADU) relative to existing alarm systems at the local sites.	131	Yes	B	
--	--	Site Profile	132	Yes	11	Site and date should be incorporated on form
			134	No	--	Format and Report can be generated automatically from data contained in data base.
			139	Yes	F & G	

Table 2-1. Annex A Matrix (Continued)

JOT&E		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.1.1.9	A-75	Evaluate the utility of the MTS as a piece of performance monitoring test equipment at the local site.	131	Yes	B	
			133	Yes	D	Site should be incorporated on form.
			134	No	--	Format and Report can be generated automatically from data contained in data base
2.4.1.1.10	A-82	Evaluate the relative speed and quality of doing baseband analysis using the BISSA controlled by the NSS as compared to manual accomplishment at the local site.	130	Yes	B	Site should be incorporated on form.
			135	Yes	D	Form should contain site and date information.
			134	No	--	Format and Report can be generated automatically from data contained in data base.
2.4.1.1.11	A-86	Evaluation of the capability of the NSS controlling the MTS options to accomplish TPA measurements of wideband systems.	140	Yes	B	Site should be on form.
			141	Yes	B	Site should be on form.
			142	Yes	B	Site should be on form.
			143	Yes	B	Site should be on form.
			144	Yes	B	Site should be on form.
			145	Yes	B	Site should be on form.
			146	Yes	B	Site should be on form.
2.4.1.1.12	A-99	Evaluate the capability of the NSS controlled MTS (MAC) to make VF, DC and HSL measurements.	136	No	--	Format and Report can be generated automatically from data contained in data base.
2.4.1.1.13	A-102	Evaluate whether the NSS console operator can ascertain the source of alarms transmitted to the NSS and can use the AHS through the NSS to determine the status of particular alarms.	132	Yes	D	Site and date should be incorporated on form.
2.4.1.1.14	A-104	Evaluation of the ability to accomplish PMP testing using the time dependent test capability of the NSS.	137	Yes	D	Site should be incorporated on form.
			147	Yes	D	Site should be incorporated on form.
2.4.1.1.15	A-113	Evaluate whether the ALE's alarm levels can be established such that they are site and transmission link independent.	139	Yes	C	Site and date should be incorporated on form.
2.4.1.1.16	A-114	Evaluation of the utility and completeness of displays generated by the ALEs and NSS.	145	Yes	D	Site should be incorporated on form.
			134	No	--	Format and Report can be generated automatically from data contained in data base.

Table 2-1. Annex A Matrix (Continued)

JOT&E PARA. NO.	PAGE NO.	OBJECTIVE	FORM	ADP ADAPT- ABILITY	CARD NO.	REMARKS
2.4.1.2.2	A-119	The usefulness of the ATEC message mode feature as a method of coordinating between ATE operators, and between ATE operators and the NSS operator.	150	Yes	E	Site and ATE Type should be incorporated on form.
2.4.1.2.3	A-122	Evaluation of the usefulness of the ATEs in facilitating alternate routing decisions and restoral actions.	151	Yes	II	
2.4.1.2.4	A-125	Evaluation of the operational impact on the loss of power to an ATE and/or the NSS and the subsequent restoral of the respective equipment.	152	No	--	Narrative in Nature.
			153	No	--	No ADP necessary per test team representatives.
2.4.1.2.5	A-132	Evaluation of the ATEC system operations during degraded conditions of either the ATEC system, the telemetry links, or both.	154	No	--	The present form is narrative in nature.
2.4.1.2.6	A-134	Evaluation of the ability of an ATE(s) to fulfill the total testing requirements of the site at which it is installed and identify the manual test equipment necessary to supplement the ATEC capability.	155	No	--	No processing necessary
2.4.1.2.7	A-136	Evaluation of the manual backup necessary to sustain an acceptable technical control operation for 24 hours, one week, and one month in the event of the loss of use of the ATEC equipment at a site.	156	No	--	The present form is narrative in nature.
2.4.1.2.8	A-139	Evaluation of the time delay for task execution by the NSS console operator as affected by different loading on the NSS, from zero to all ATE(s) in operation and connected to the NSS.	157	Yes	B	Site should be incorporated on form.
2.4.1.2.9	A-142	Verification that the IQCs can correctly identify traffic types in the operational environment.	158	Yes	C	Site should be incorporated on form.
			159	No	--	Format and Report can be generated automatically from data contained in the data base.
2.4.1.2.10	A-145	Verification that the DDMS can correctly determine baud rate using the dynamic baud determination routine and the associated KW-26 routine in an operational environment.	158	Yes	C	Site should be incorporated on form.
			179	No	--	Format and Report can be generated automatically from data contained in the data base.

Table 2-1. Annex A Matrix (Continued)

JOT&E		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.1.3.1	A-148	Evaluation of the capability of the technical controller to recognize a trend in the performance of a communications circuit/system using information provided by the ATE and/or NSS.	160	Yes	A	
			161	Yes	D	Site and date should be incorporated on form.
			134	No	--	Format and Report can be generated automatically from data contained in the data base.
2.4.1.4.1	A-157	To evaluate the enhancement (provided by the IQCS and the IQCS controlled by the NSS) of the technical controllers capability to accomplish fault isolation tasks.	168	Yes	B	ATEC type should be included on form.
2.4.1.4.2	A-161	To evaluate the enhancement (provided by the IQCS, BBSA, and MTS and options under local site and/or NSS control) of the technical controllers capability to accomplish fault isolation.	168	Yes	B	ATEC type should be included on form.
2.4.1.4.3	A-163	Evaluate the enhancement (provided by the MSMS and the DDMS site controlled or controlled by the NSS) of the technical controllers capability to accomplish fault isolation tasks.	168	Yes	B	ATEC type should be included on form.
2.4.1.4.4	A-165	To evaluate the usage made of the individual ATE(s) and NSS for fault isolation under normal operating conditions.	169	No	--	Format and Report can be generated automatically from data contained in the data base.
			170	No	--	Format and Report can be generated automatically from data contained in the data base.
2.4.1.4.5	A-170	Evaluate the effectiveness of using ATEC equipment to isolate problems on S3 circuits.	172	Yes	B	Site and circuit ID should be included on form.
2.4.1.4.6	A-176	Evaluate the utility of the NLG and SLG in fault isolation.	None	--	--	
2.4.1.4.7	A-178	Evaluate the utility of the ATEC equipment in aiding the technical controller in accomplishing more precise fault isolation than manual methods.	173	Yes	B	Circuit ID should be included on form.
			174	Yes	B	Circuit ID should be included on form.
			175	Yes	B	
			176	Yes	B	Circuit ID should be included on form.
			177	Yes	B	
2.4.1.5.1	A-191	Evaluation of the extent to which record keeping is enhanced through the use of ATE(s) and NSS outputs.	171	No	--	No processing necessary

Table 2-1. Annex A Matrix (Continued)

JOT&E		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.1.5.2	A-194	Evaluation of the completeness of NSS generated reports relative to MILDEP and DCAC 310-55-1 status reporting requirements.	171	No	--	No processing necessary
			162	Yes	E	Form should contain ATE Type
			162A	Yes	E	
			163	Yes	E	
			164	Yes	D	Site should be included on form.
2.4.1.6.1	A-204	Evaluate the utility of the ATEs in facilitating management and control at level four as defined in the draft DCA concept of operation for ATEC. Management is defined as having adequate information (timely and accurate) about the status of a circuit/system for which a site is responsible and being capable of determining the appropriate action. Control is having the authority to implement and direct the necessary actions.	None	--	--	
2.4.1.6.2	A-205	Evaluate the utility of the ATEC in facilitating management and control at level three as defined in the draft DCA concept of operations for ATEC. Management is defined as having adequate information (timely and accurate) about the status of a circuit/system for which a site is responsible and being capable of determining the appropriate action. Control is having the authority to implement and direct the necessary actions.	None	--	--	
2.4.2.1	A-206	Determine the reliability (mean time between failure, MTBF), maintainability (mean time to repair, MTTR), and availability (A) of the ATEC system.				See Table 2.3
2.4.2.1.1	A-208	Determine the mean time to isolate ATEC malfunctions to hardware or software.				See Table 2.3
2.4.2.1.2	A-209	Determine the mean time to isolate a fault once it has been determined that it is hardware related.				See Table 2.3
2.4.2.1.3	A-210	Determine the mean time to effect the repair of a hardware fault once the suspect module/component is identified.				See Table 2.3
2.4.2.1.4	A-211	Determine the mean time to complete a minimum performance test to ascertain that system restoration action is complete.				See Table 2.3

Table 2-1. Annex A Matrix (Continued)

JOT&E		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.2.1.3.1	A-212	Evaluate the ability of site personnel to accomplish data base updates, pre-processed program patches, and program restarts without support from the on-site computer software personnel.	104	No	--	Narrative in nature.
2.4.2.1.3.2	A-214	Evaluate the software program code to determine the visibility of the logic and structure and whether the structure will allow quick isolation of software problems.	97	Yes	D	Site should be included on form.
2.4.2.1.3.3	A-223	Evaluate the adequacy of the software debugging aids such as core dumps to provide information that is useful in error tracking. The usefulness of error messages and diagnostics that are provided when the system fails. The capability for debugging software on-site.	103	Yes	D	Site should be included on form.
2.4.2.1.3.4	A-226	Evaluate the mean time between software errors.	99	No	--	Narrative in nature.
2.4.2.1.3.5	A-227	Evaluate the mean time to isolate a software error once it has been detected.	93	No	--	Narrative in nature.
2.4.2.1.3.6	A-228	Evaluate the meantime to modify the code when depot corrective action is required.	105	No		Narrative in nature.
2.4.2.1.3.7	A-229	Evaluate the extent to which software modifications and checkout is dependent upon unique special purpose hardware and software systems.	105	No		Narrative in nature.
2.4.2.1.3.8	A-232	Evaluate the capability to modify the data base on-site to accommodate reconfiguration.	106	No		Narrative in nature.
2.4.2.1.3.9	A-235	Evaluate the Air Force capability to debug and provide software fixes at the depot level.	None	--	--	
2.4.2.1.3.10	A-236	Evaluate the flexibility of peripheral storage to include investigation of the disk management scheme and the ability for reallocation of storage space on the disk when files are added and deleted.	None	--	--	
2.4.2.1.3.11	A-238	The adequacy of space available both in core and on disk for program expansion and identification of the physical limitations on expansion of the computer subsystem for each of the ATEs and the NSS.	None	--	--	

Table 2-1. Annex A Matrix (Continued)

JOT&F		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.2.2.1	A-219	Evaluation of the ATEC installation and checkout manning requirements.	149	No	--	Narrative in nature.
2.4.2.2.2	A-211	Evaluate post-ATEC operations manning requirements to include site limited manual backup capability and DCS evaluation teams.	165	Yes	B	
			124			There is a question as to what data is on form.
			173A	Yes	B	
			173D	Yes	B	
2.4.2.2.3	A-250	Evaluate the post-ATEC maintenance manning requirements to include site and wideband maintenance teams.	166	Yes	H	
			166A	Yes	H	
			166B	Yes	B	Type should be included on form.
2.4.2.2.4	A-253	Evaluate post-ATEC management manning requirements for levels three and four as defined in the DCA concept of operations for ATEC.	None	--	--	
2.4.2.3.1	A-254	Additional training due to AFCS/MOS/NEC skill-mix changes throughout the system.	101	No	--	Form requires subjective and narrative data.
			102	No	--	Form requires subjective and narrative data.
			107	No	--	Narrative questionnaire.
2.4.2.3.2	A-251	To access and/or extended skills required to use ATFC provided data for making meaningful and accurate assessment of system performance, and to operate, monitor, and maintain the ATEC subsystem to include the NSS.	107	No	--	Narrative questionnaire.
2.4.2.4	A-252	Logistics Supportability	--	--	--	See Table 2.2
2.4.2.5	A-253	Human Factors - Evaluate the complexity of the man-machine interface. Determine if the operator and maintainer can easily interact with the ATEC system in the operational environment and if information is presented in a format that is useful to operational personnel.	91	Yes	D	
2.4.2.6.1	A-257	Physical Supportability	None	--	--	
2.4.2.6.2	A-256	Physical Supportability	None	--	--	

Table 2-1. Annex A Matrix (Continued)

JOT&F		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CARD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.4.2.6.3	A-269	Security compatibility	None	--	--	
2.4.2.6.4	A-270	Environmental compatibility	None	--	--	
2.4.2.6.5	A-271	Electromagnetic compatibility (EMC)	None	--	--	
2.4.2.6.6	A-272	Operational compatibility	None	--	--	
2.4.2.7	A-273	Cost of Ownership				Cost analyses are being performed by BDM

Table 2-2. Annex B Matrix, Appendix 1

JOT&E PARA. NO.	PAGE NO.	OBJECTIVE	FORM	ADP ADAPT- ABILITY	CARD NO.	REMARKS
2.1.1	B-1-5	To evaluate spares repair parts support and consumption during the JOT&E	107	No	--	Form requires subjective and narrative data.
2.2.2	B-1-12	To assess the adequacy, compatibility, usage and need of on-site SE/test equipment to support the ATEC JOT&E program.	108	No	--	Form requires subjective and narrative data.
2.3.1	B-1-18	To assess the supply and maintenance organization / intermediate and depot level functions and facilities.	109	No	--	Form requires subjective and narrative data.
2.4.1	B-1-23	To assess the adequacy, completeness, effectiveness and useability of the contractor prepared technical manuals, handbooks and/or commercial manuals or prime equipment/SE to evaluate their compliance with the statement of work (SOW), contractor data requirements lists (CDRL), and technical order publications for ATEC.	100	No	--	Forms require subjective and narrative data.
			110	No	--	
			102	No	--	
			111	No	--	
			112	No	--	
			113	No	--	
2.5.1	B-1-57	To evaluate the Storage and Warehousing at the test facility.	114	No	--	Forms require subjective and narrative data.
			115	No	--	
			116	No	--	
			AFTO 158	No	--	
2.6.1	B-1-62	To evaluate the transportation, packaging, packing, and materials handling utilized during the JOT&E.	AFLC 1057B	No	--	Form requires subjective and narrative data.
2.7.1	B-1-69	To evaluate the system safety engineering as pertains to the ATEC system.	117	No	--	Form requires subjective and narrative data.
2.8.1	B-1-71	To evaluate the Personnel Subsystem inherent in the ATEC system.	118	No	--	Form requires subjective and narrative data.
2.9.1	B-1-77	Evaluate corrosion control for the ATEC system and insure that the materials and processes used in equipment fabrication shall be such that corrosion does not occur.	None	--	--	Form requires subjective and narrative data.

Table 2-2. Annex B Matrix, Appendix 1 (Continued)

JOT&E		OBJECTIVE	FORM	ADP ADAPT-ABILITY	CAHD NO.	REMARKS
PARA. NO.	PAGE NO.					
2.10.1	B-1-92	To evaluate the contractor prepared installed drawing records (as installed).	120	No	--	Form requires subjective and narrative data.
2.11.1	B-1-94	To assess the effectiveness of BITE to evaluate the overall performance, isolate faults to the LRU and detect faults without the need to perform off-the-air tests.	121	No	--	Forms require subjective and narrative data.
2.12.1	B-1-90	To assess the adequacy, accuracy, completeness, and effectiveness of contractor prepared data (drawings, specifications, technical orders, etc.) to permit ATLC to maintain the designed survivability of the ATEC equipment throughout its operational life cycle.	122	No	--	
2.13.1	B-1-91	To assess the transportability of items and equipment provided to support the test program and to evaluate the technical adequacy of the packaging design and the handling and mobility features incorporated to facilitate handling and movement.	None	--	--	
2.14	B-1-93	Reliability/Availability/Maintainability	--	--	--	See Table 2.3
2.15	B-1-94	Cost of Ownership	--	--	--	
2.16	B-1-95	Compatibility/Interoperability	--	--	--	See 2.4.2.6.1 through 2.4.2.6.6, Table 2.1
2.17	B-1-96	Assess the validity of the ORLA recommendations for throw-away versus recoverability and the level of repair of LRUs/SRUs. Assess the validity of the recommended maintenance specialties and skill levels.	None	--	--	
2.18	B-1-97/98	To ensure that materials and parts used in the ATEC equipment are of uniform quality and reproducibility, ensure that existing GFE parts and equipment are used to the maximum extent possible, and ensure that compatible items such as LRUs and SRUs used within the ATEC equipment are identified for maximum interchangeability.	None	--	--	

Table 2-3. Annex B Matrix, Appendix 3

JOT&E PARA. NO.	PAGE NO.	OBJECTIVE	FORM	ADP ADAPT- ABILITY	CARD NO.	REMARKS
2.0	B-3-1	The function of the R/M evaluation is to provide further assurance that the R/M requirements including software will be met in operational use by the ATEC equipment designed and developed by the contractor. In addition, the evaluation will provide further information on which to base a production decision for the ATEs and NSS.	DDM53	No	--	All Narrative
			AFSC 258 & 258-4	Partially	I	
			95	No	--	If info in data base, Form could be generated automatically
			123	No	--	If info in data base, Form could be generated automatically
			119	No	--	If info in data base, Form could be generated automatically

#### 2.1.2.1 Appendix 1 - Logistics Supportability Test Procedures

Appendix 1 contains many forms, most of which require subjective and narrative data for completion. The recommendation is made that this section not be utilized in ADP. Further, it is recommended that the normal logistics supportability procedures now used by the three services be continued along with any additional manual processing of data forms required by the test procedures.

#### 2.1.2.2 Appendix 3 - Reliability/Maintainability Data Reduction and Analysis Plan

Appendix 3 contains two forms, AFSC 258 and AFSC 258-4, which are partially adaptable to ADP. The useful information on failed items, man hours, job control number, etc., will be used in correlation.

#### 2.2 DCEC MODIFIED JOT&E FORMS

There are nine forms which DCEC has identified as containing data required as input. These forms are similar in content to the JOT&E test forms and are included in Table 2-1 under related test objectives. The forms are as follows:

<u>Form</u>	<u>Title</u>
130A	Baseband Sweeps: Man-Hour Allocations
162A	DCAC 310-55-1, MILDEP Reports & Other Reports
166A	Fault Detection/Isolation
166B	Assistance to Other Facilities and Other Non-Reportable Actions (As Applicable)
173A	Quality Control Testing: Man-Hour Allocations
173B	Performance Monitoring Program: Man-Hour Allocations
173C	Performance Monitoring Program: Man-Hour Allocation (Plotting and Analysis)
173D	Maintenance Man-Hour Allocations
199	Site Profile

All nine forms are adaptable to ADP and fit the associated data input format card identified in the matrix.

### 2.3 ATEC PAPER TAPE PREPROCESSING

A crucial problem is the paper tape data being collected. The paper tape being used to collect ATEC parameter data has an effective field life span of approximately 3 months. The oil impregnated nature of this tape causes serious problems in terms of deterioration and storage. Because of the oil, the tape cannot be stored in cardboard containers, or near any paper products. The leeching of the oil from the tape to its surrounding environment has the effect of contaminating and deteriorating the container in addition to giving off an unpleasant odor.

Due to either loss of oil, or to other environmental conditions, tapes become brittle after a short period of time which renders them unreadable. Thus, they break repeatedly when attempts are made to read them via high-speed paper tape readers which will be needed to transpose this large volume of paper tape data into magnetic tape or disk files. Additionally, the nature of paper tape makes its transportation difficult. Rolls of tape have a tendency to unwind or be mutilated when transported from place to place in briefcases or boxes.

The solution to these problems is the conversion of paper tape to another medium. Punched cards or magnetic tape, either reel or cassette, are viable alternatives. While there are valid reasons for considering punched cards and magnetic tape mediums equally, this Implementation Plan calls for the paper tape to be converted to magnetic tape.

Data is currently being collected and stored on paper tape at Langerkopf in Germany. At this site is the Nucleus processor, which possesses both magnetic tape and paper tape subsystems. The software programs required to read paper tape and write magnetic tape are currently available as part of the Nucleus software. These peripheral "driver" modules would be called by a simple software module that would govern the reading of the paper tape and the writing of the magnetic tape. In its simplest form, this program would do no more than request the paper tape driver module to read in a block of paper tape, and then request the magnetic tape driver

to write the block out to a magnetic tape. To facilitate later processing of this data, the program should write an identification label on the magnetic tape, and include an identification block in front of each reel of paper tape. The identification label could include such data as the time span represented on the tape, sites involved, etc. The identification block written prior to each paper tape segment should include data identifying the site, type of device, shift or time span, and possible measurement commands. These identification blocks could be input from punched cards read prior to reading each paper tape segment.

As the current Nucleus software does not use either the paper tape reader or magnetic tape unit, this program could be run as a background job on-line or after the testing had ended for the day.

Because of the time critical nature of this conversion effort, a brief flowchart has been included as Figure 2-4.

#### 2.4 OUTAGE REPORTS

Outage Report data will be obtained from DD Forms 1698 and 1433 by test team personnel conducting tests at the various sites. Figure 2-5 is a retyped version of JOT&E Procedure 3, dated 12 Nov 75, entitled "Outage Data Collection." Outage data will be keypunched using the formats and instructions. Sample Outage Data Information form is shown in Figure 2-6.

#### 2.5 MAINTENANCE DATA

The format of maintenance data which is input to the data base is unknown at this time. However, it is assumed that it will be machine readable. Once this information is available, a program will be written to read the data into the data base.

At this time, no major problems are anticipated, since the data base has been structured to accommodate the MDC data.

#### 2.6 CIRCUIT DIRECTORY DATA

The current directory data input format is in the same category as the Maintenance data. Its format is unknown but it is assumed to be machine readable. Once the

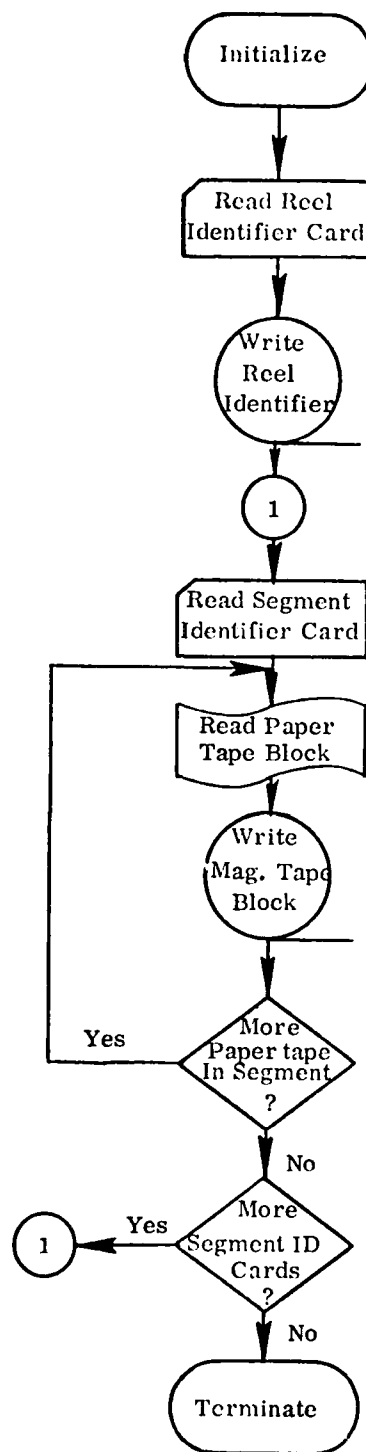


Figure 2-4. Paper Tape to Magnetic Tape Flow

## OUTAGE DATA COLLECTION

**PURPOSE:** The purpose of this procedure is to ensure that Operations Baseline Data (file SMART-OC) are kept up-to-date.

**OBJECTIVE NUMBER:** 2.4.1.1.2; 2.4.1.1.5; 2.4.1.2.3; 2.4.1.6.1; 2.4.1.6.2; 3.1.2

**METHOD:** All circuit, trunk, or link outages will be recorded at all stations of concern. Data will be transcribed from station records as directed or during all idle periods while conducting tests at the given station(s). All Test Conductors are responsible for ensuring that this procedure is implemented. When a test is being conducted, Test Conductors on all shifts that have access to the site records will transcribe data from the site records onto the Data Collection Forms. Circuit outage data will be obtained from DD Form 1698 and DD Form 1443.

**EQUIPMENT REQUIRED:** None

**REQUIRED DATA PRODUCTS:** Completed Circuit Outage Data Collection Forms.

### PROCEDURES:

1. Filed circuit outage forms (e.g., DD 1443 and DD 1698) will be withdrawn from the station files for transcription onto the Circuit Outage Collection Forms. If the circuit outage collection is done in conjunction with a test, the header line will be completed as follows:

- a. Blocks 1 through 3 will contain the DCS reporting designator for the station at which the test is being performed.
- b. Blocks 4 through 15 will contain the assigned test number.
- c. Blocks 16 through 25 will contain the last name of the Test Conductor.

Figure 2-5. Outage Data Collection (Page 1 of 4)

- d. Blocks 26 through 33 will contain the DTG the test began. The DTG will be in the following format:
- (1) Block 26 will contain the last numeral of the current year.
  - (2) Blocks 27 through 29 will contain the Julian day.
  - (3) Blocks 30 through 33 will contain the hour and minute the test commenced. An example of the format is provided below:

5	165	13	15
1975	165 Day	Hour	Minute

If the data collection is not performed in direct conjunction with a specific test, only items a, c, and d will apply.

2. Circuit outages will be transcribed as follows:
- a. Blocks 1 through 3 will contain the DCS reporting designator of the station at which the data is being collected.
  - b. Blocks 4 through 11 will contain the full CCSD of the circuit. If the station's outage ticket contains only the last four elements of the CCSD, complete only blocks 8 through 11. No further research is required.
  - c. Blocks 18 through 25 will contain the DTG of the time of the outage (this will be in the same format as described in 1.d).
  - d. Blocks 26 through 33 will contain the DTG the circuit was returned to service.
  - e. Blocks 34 through 36 will contain the RFO code.
  - f. Block 37 will indicate whether or not the circuit was restored by using an alternate route. (Y-Yes; N-No).

Figure 2-5. Outage Data Collection (Page 2 of 4)

- g. Blocks 38 through 40 will contain the DCS reporting designator of the station charged with the outages.
- 3. Trunk outages will be transcribed as described with the exception that blocks 4 through 9 will contain the DCS trunk identifier rather than a CCSD.
- 4. Link outages will be transcribed as described except that the DCS link identifier will be contained in blocks 4 through 8 vice the CCSD or trunk ID.
- 5. Only valid RFO codes and DCS reporting station designators will be allowed. Due to the use of radio station call signs and locally devised station designators, a list of DCS reporting designators has been provided. It will be necessary to examine the station's outage ticket to ensure the proper code is used.
- 6. NOL (no outage logged) and "information only" tickets will not be recorded.
- 7. Data Log Cards will be used at each site to prevent unnecessary duplication of effort or losing data.
  - a. Each site record file will contain a Data Log Card containing the following information:
    - (1) Data transcriptions were made.
    - (2) DTG of first record transcribed.
    - (3) DTG of last record transcribed.
    - (4) Name of person making transcriptions.
  - b. The Data Log Card will be completed by the person making transcriptions each time a set of data is copied. The card will be placed in the file behind the last record copied.
- 8. Completed data collection forms will be keypunched for ADP.

Figure 2-5. Outage Data Collection (Page 3 of 4)

**COORDINATION AND REVIEW:** This procedure was coordinated with and reviewed by:

Major C. J. Fullilove

Captain D. C. Krukar

Captain R. H. Gattis

SMSgt J. G. Cerny

MSgt R. G. Soman

Figure 2-5. Outage Data Collection (Page 4 of 4)

SITE		TEST NR.										TEST CONDUCTOR										DATE										PAGE OF																						
SITE		CCSD, TRUNK or LNK					OF STA					S/R					TIME OUT					TIME IN					RFO					STA					AUCHARGED																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
L	K	F	D	T	X	X	6	E	8								5	2	6	2	1	2	8	5	5	2	6	2	1	3	3	8	J	F	W	N	F	E	I															
L	K	F	I	4	C	Z	B	1									5	2	6	2	1	3	3	4	5	2	6	2	1	3	4	5	D	B	E	N	S	C	H															
L	K	F	M	8	8	9	1										5	2	6	2	1	7	5	5	5	2	6	2	1	8	8	4	E	E	P	N	L	K	F															
L	K	F															5	2	6	2	2	8	8	5	5	2	6	2	2	1	1	8	A	N	R	N	O	F	F															

- A. Example of circuit outage with full CCSD.
- B. Example of trunk outage with trunk ID.
- C. Example of link outage with link ID.
- D. Example of circuit outage with only last four elements of the CCSD.

Figure 2-6. Sample Outage Data Information

information is available, a program will be written to read the information into the data base.

No problem is anticipated since connectivity has been built into the data base and the work now in progress on Task C has provided a workable methodology to utilize the data.

## 2.7 SUMMARY

Table 2-4 illustrates the conclusions reached concerning the conversion of the data types.

Table 2-4. Raw Data Conversion

Raw Data	Initial Medium	Processing Medium
JOT&E forms	Handwritten forms	Punched cards
1443, 1698, OPS, TCF files, Army MDC forms	Handwritten forms	Punched cards
Directory data on links, trunks, etc., from DCA circuit and trunk directories	Processor printouts	Punched cards
Parameter data from I/OQCS, DDMS, etc.	Paper tape	Magnetic tape
MDC data from 1945 Comm. Squadron	Magnetic tape	Magnetic tape

Some of this data, such as the MDC file from the 1945 Comm. Squadron at Rhein Main will be easy to gather and use since it has already been ordered, keyed, and used for processing. Some of the data, such as the parameter data from the ATEC equipment and the JOT&E test forms, will require processing from one medium to another. The rest of the data, particularly directory data, pose more severe difficulties because there is no common methodology for filling out the required forms, or the conversion of the data will require extraction from existing documentation.

Conversion of this data will be very time consuming. There is a massive amount of work to be done prior to manipulating the data to obtain the required reports. This work can be divided into two phases:

- Collection of the baseline data in machine readable formats
- Subsequent loading and modification of the baseline data base.

A vigorous attempt must be made to standardize the input coming from non-ATEC sites or sites using nonstandard forms. If this is not possible, a re-evaluation of the reports is indicated.

The collection of data for all but the Network Directory Data Element has already begun. Baseline data for this element should be extracted as soon as possible. While this element will be volatile in certain areas, i.e., circuit identifiers, the major portion is stable. Recommendations for this portion of the data base will be more fully explored in Section 4.

### SECTION 3 - OUTPUT REQUIREMENTS

Thus far four categories of data output have been identified. These categories are:

1. AFTEC JOT&E Reports
2. DCEC Manpower Reports
3. Measure of Effectiveness Reports
4. Summary Reports.

The following paragraphs detail how the various outputs are to be generated from the data and assembled into the data base according to this Implementation Plan.

#### 3.1 AFTEC JOT&E REPORTS

There are a number of reports and summaries which are required periodically during the course of the JOT&E testing. In referring to the matrices in Tables 2-1, 2-2, and 2-3, the REMARKS column indicates a class of JOT&E forms which are not adaptable to ADP since the data contained on the forms was already in the data base. Therefore, the information required by the reports or summaries could be generated directly from the data base.

It is envisioned that the information will be displayed in a format that imitates as much as possible the JOT&E forms. The following is a list of titles and form numbers of the reports and summaries which will be generated in this fashion.

<u>Form</u>	<u>Title</u>
95	R/M Daily Summary
119	Intermediate Level Maintenance Monthly Summary
123	On-Equipment Maintenance Monthly Summary
126	Level Discipline Evaluation
127	Alarm Status Record
134	Questionnaire Summary Form
136	Data Compilation Form

<u>Form</u>	<u>Title</u>
159	Traffic Recognition Evaluation Compilation Sheet
169	Fault Isolation Actions Record
170	Station Outage Record Compilation
179	DDMS Baud Determination Evaluation Compilation Sheet

For information purposes a sample of each form is included in this section as Figures 3-1 through 3-11.

### 3.2 DCEC MANPOWER REPORTS

DCEC representatives have expressed a requirement to perform statistical analyses in certain areas of manpower utilization, especially from "before" and "after" ATEC. A statistical package, called the BMD, Biomedical Computer Programs, will be utilized to fulfill other analyses described in Paragraph 3.3. This same package will satisfy the DCEC manpower analysis and concurrence for the implementation has been given by DCEC.

### 3.3 MEASURE-OF-EFFECTIVENESS REPORTS

Requirements for analysis reports other than those intended to directly satisfy OT&E objects have been identified by the ATEC Test Team Analyst. These analyses will satisfy DT&E requirements, some OT&E requirements, and provide management information.

The reports will be put into a standard format and will be published on a monthly, semi-annual, and annual basis. The monthly reports will summarize the previous calendar month's data. The semi-annual reports will summarize the preceeding 6 month's data. The annual reports will be a 12-month summary.

Table 3-1 lists those reports which have been identified. Table 3-2 is a further breakdown of the Measure-of-Effectiveness reports. The horizontal axis presents the type of tests which are to be performed and the vertical axis represents the partitioning of the data within the parameter under analysis. In addition, a Definition and Explanation directory of the various types of tests to be performed is included.







SITE _____		TEST PERIOD _____																														
ATE TYPE _____		TEST TEAM MEMBER _____																														
		NUMBER OF AV ALARMS PER DAY																														
SCANNER ADDRESS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

ATEC Form 126 (ATEC) Test  
Oct 1973

Figure 3-4. Level Discipline Evaluation

**SITE:** \_\_\_\_\_

ATE TYPE: \_\_\_\_\_

DTG: \_\_\_\_\_

CCSD	SCANNER ADDRESS	ALARM STATUS			REMARKS
		(1) BEFORE	(1) AFTER	(2) IMPROVEMENT	

Figure 3-5. Alarm Status Record



[illegible]

ATTC Form 136 (ATTC) Test  
03-1975

**Figure 3-7. Data Compilation Form**

**Figure 3-8. IQCS Traffic Recognition Evaluation  
Compilation Sheet**

# FAULT ISOLATION ACTIONS RECORD

SITE: \_\_\_\_\_ ATEC EQUIPMENT(S) \_\_\_\_\_  
 DATE: \_\_\_\_\_

DTC	TYPE OF FAULT ISOLATION ACTION	TEST OR MEASUREMENTS MADE	SYSTEM OR CIRCUIT INVOLVED	ATEC EQUIPMENT USED	MANUAL EQUIPMENT USED	REMARKS

AFTEC Form 169 (ATEC) Test  
 Oct 1973

Figure 3-9. Fault Isolation Actions  
 Record

**DATE:** \_\_\_\_\_

[illegible]

ATTC Form 170 (ATTC) Test

3-12

- NOTES: (1) Brief comment describing outage, e.g., "level problem", "noise problem", "signal loss", etc.
- (2) Answer "YES" or "NO" if ATEC was used to aid in fault isolation. If "YES" enter what type of ATEC equipment. If ATEC is not connected to the system or circuit, enter "NO."
- (3) Enter if there was an ATEC alarm associated with the outage.

ATEC Form 170 (Reverse)

Figure 3-10. Station Outage Record Compilation (Sheet 2 of 2)

[illegible]

**Figure 3-11. DDMS Baud Determination Evaluation  
Compilation Sheet**

Table 3-1. Measure-of-Effectiveness Reports

<u>TITLE</u>	<u>FREQUENCY</u>
Outage Duration, Less than 30 Minutes	MARCR*
Outage Duration, All Durations Combined	MARCR*
Outage Duration, Greater than 30 Minutes	MARCR*
Bias Distortion (Levels Discipline)	Monthly, Semi-Annually
Peak Distortion (Levels Discipline)	Monthly, Semi-Annually
Envelope Delay, ED (Levels Discipline)	Monthly, Semi-Annually
Frequency Response, FR (Levels Discipline)	Monthly, Semi-Annually
Phase Jitter, PJ (Levels Discipline)	Monthly, Semi-Annually
3-kHz Weighted Noise Power, WF (Levels Discipline) OQCS	Monthly, Semi-Annually
Frequency Offset, FO (Levels Discipline)	Monthly, Semi-Annually
Net Loss, NL (Levels Discipline)	Monthly, Semi-Annually
C-Msg Weighted Noise Power, CN (Levels Discipline) OQCS	Monthly, Semi-Annually
Average Power, AV (Levels Discipline)	Monthly, Semi-Annually
Peak-To-Average Ratio, PA (Levels Discipline)	Monthly, Semi-Annually
Fax Low Level, FL (Levels Discipline)	Monthly, Semi-Annually
Frequency, FR (Levels Discipline)	Monthly, Semi-Annually
Half Peak Power, PI (Level Discipline)	Monthly, Semi-Annually
3- kHzWeighted Power Noise WF (Level Discipline) IQCS	Monthly, Semi-Annually
C-Msg Noise Power, WN (Level Discipline) IQCS	Monthly, Semi-Annually
Maintenance Manhour Expenditure	MARCR*
Maintenance Actions	MARCR*

\*Monthly and As Required Cumulative Report

Table 3-1. Measure-of-Effectiveness Report (Cont'd)

DEFINITIONS AND EXPLANATIONS

The following is a list of the terms, with explanations, used in this table.

1. ANOVA - A one-way Analysis of Variance performed with a 95% F-Test.  
This test for a difference in means will detect changes with respect to time for all elements within each partition.
2. Count N - Total number of events, N, that occurred within report period.
3. Cum s - A cumulative (running) monthly standard deviation is to be computed.
4. Cum  $\bar{x}$  - A cumulative (running) monthly mean is to be computed.
5. Data Source - Data files from which information is obtained to perform required computations.
6. Histo - A histogram of X is to be plotted with a listing of associated cell counts and cell percentages.
7. Measure-of-Effectiveness (MOE) - Provides a method of measuring the state of something quantitatively. A change in the value of a measure directly reflects a change in state of the item measured and provides a means for making judgements on the quality of the thing measured; or that which causes the change being measured. For our purposes, each MOE value will be referred to as X in all equations.
8. Partition - A sorting of the MOE according to some well-defined characteristic (e.g., if data is partitioned by site, partition elements will be each site from which data was obtained.)
9. % - Percentage of contribution of each element of a partition to the whole.  
Unless otherwise specified, this will be a percentage of number of measurements, not a percentage of sum of measurements.

Table 3-1. Measure-of-Effectiveness Report (Cont'd)

10. Plot  $\bar{x} - \bar{x}$  is to be plotted against time starting with estimate of  $\mu$  and continuing with  $\bar{x}$  for month one, then month two, etc.
11. Report - Which reports MOE is to be contained in: monthly, semi-annual, annual.
12. Trend  $\bar{X}$  - A straight line regression of  $\bar{X}$  versus time is to be performed. First variable,  $X_0$ , will be estimated from baseline data.  $X_1$  will be  $\bar{X}$  for first month, etc. A significant trend will be indicated when 95% confidence interval for estimate of slope does not contain 0.
13.  $s$  - Sample standard deviation of the MOE.
14.  $s:\sigma$  - Hypothesis test to determine whether or not  $s$  (sample standard deviation) comes from the same population as the population standard deviation. An estimate of  $\sigma$  will be computed from the baseline data.
15.  $\bar{X}$  - Sample arithmetic mean of the MOE.
16.  $X:\mu$  - Hypothesis test to determine whether or not  $X$  (the sample mean) comes from same population as population mean,  $\mu$ . An estimate of  $\mu$  will be computed from baseline data. Nonparametric methods will be used if tests of the baseline data cannot determine distribution.
17.  $\bar{X}:\bar{X}$  - A hypothesis test between two means to determine whether or not there is a difference between the same categories measured at different sites, e.g., AV on 2400-baud circuits at Langerkopf and AV on 2400-baud circuits at Feldberg.



MEASURE OF EFFECTIVENESS: PEAK DISTORTION (LEVELS DISCIPLINE)

DATA SOURCE: DDMS, MSMS, CIRCUIT DIRECTORY

REPORT: MONTHLY, SEMI-ANNUAL

COMPUTATION

[illegible]

[illegible]

### Table 3-2. Measure-of-Effectiveness Report Matrix (Cont'd)

[illegible]



[illegible]























Table 3-2. Measure-of-Effectiveness Report Matrix (Cont'd)

MEASURE OF EFFECTIVENESS: MAINTENANCE MANHOURLY EXPENDITURE									
DATA SOURCE: MDC									
REPORT: ALL									
PARTITION	COMPUTATION								
	$\bar{X}$	$s$	$\bar{X}:\mu$	$s:\sigma$	Trend $\bar{X}$	Plot $\bar{X}$	Histo	ANOVA	
Site	X	X	X	X	X	X	X	X	
Equipment Type	X	X	X	X	X	X	X	X	
Scheduled (For All Sites)	X	X	X	X	X	X	X	X	
Unscheduled (For All Sites)	X	X	X	X	X	X	X	X	
Scheduled, by Site	X	X	X	X	X	X	X	X	
Unscheduled, by Site	X	X	X	X	X	X	X	X	
Link	X	X	X	X	X	X	X	X	
ATEC Connected Equipment	X	X	X	X	X	X	X	X	
Non-ATEC Connected Equipment	X	X	X	X	X	X	X	X	

Table 3-2. Measure-of-Effectiveness Report Matrix (Cont'd)

MEASURE OF EFFECTIVENESS: Maintenance Manhour Expenditures										
DATA SOURCE: MDC										
REPORT: ALL										
COMPUTATION										
PARTITION	TOTAL	$\bar{X}$	s	$\bar{X} : \mu$	Trend $\bar{X}$	Plot $\bar{X}$	Histo	ANOVA		
Site	X	X	X	X	X	X				
Scheduled, by Site	X	X	X	X	X	X	X			
Unscheduled, by Site	X	X	X	X	X	X	X			
ATEC Discovered, by Site	X	X	X	X	X	X		X		
Non-ATEC Discovered by Site	X	X	X	X	X	X		X		
Total	X	X	X	X	X	X				
"How Mal", ATEC Discovered	X	X	X	X	X	X	X	X		
"How Mal" Non-ATEC Discovered	X	X	X	X	X	X	X	X		

**Table 3-2. Measure-of-Effectiveness Report Matrix (Cont'd)**

[illegible]





Table 3-2. Measure-of-Effectiveness Report Matrix (Cont'd)

MEASURE OF EFFECTIVENESS: OUTAGE DURATION, GREATER THAN 30 MINUTES									
DATA SOURCE: DATA BASE CIRCUIT DIRECTORY, CIRCUIT OUTAGE DATA, AND OTHER OPS DATA									
REPORT: MARCR									
COMPUTATION									
PARTITION	$\bar{X}$	$\Delta$	$\bar{X}; \mu$	$\Delta; \sigma$	Trend $\bar{X}$	Plot $\bar{X}$	Histo	ANOVA	%
Site	X	X	X	X		X			X
Circuit Type	X	X	X	X		X			X
Link	X	X	X	X		X			X
ATEC Circuits	X	X	X	X	X	X	X	X	X
Non-ATEC Circuits	X	X	X	X	X	X	X	X	X
Scheduled, by Site (RFO-BG, -BH)	X	X	X	X	X	X	X	X	X
Unscheduled, by Site	X	X	X	X	X	X	X	X	X

The requirements will be met by utilizing a standard Biomedical Computer Program which will complement the software on the WWMCCS machine at Ramstein AFB. The BMD package was developed at the Health Sciences Computing facility, UCLA, under the sponsorship of HH Special Research Resources Grant RR-3.

Two versions of the Biomedical Computer Program (BMD) package are now existant -- BMD and a later updated version, BMDP. At present WWMCCS software only supports BMD, although BMDP is being adapted for eventual use.

Table 3-3 lists the analysis requirement against the associated program(s) of the BMD package. Listed in the table are the BMD programs and the Time Share Applications Library programs which will be available at Ramstein. Also listed are the BMDP programs that could be used when the software becomes available.

#### 3.4 SUMMARY REPORT

A requirement for a summary report of CCSD circuit performance on an as-required basis has been identified by the ATEC Test Team Analyst. The report is to contain:

- Total number of alarms
- Total number of items scanned
- Percent of time alarmed
- Correlation with outage tickets
- DTG of alarm
- DTG when alarm cleared
- Elapsed time of outage
- Reason for outage.

The report format will have a two-line display. The first line will contain the CCSD number, number of alarms, number of times circuit was scanned, and percent of time circuit was alarmed. The second line will display the DTG of alarm, status of alarm, alarm mnemonic, DTG when alarm cleared, total time of outage in minutes, and reason for the outage.

The following is a typical example:

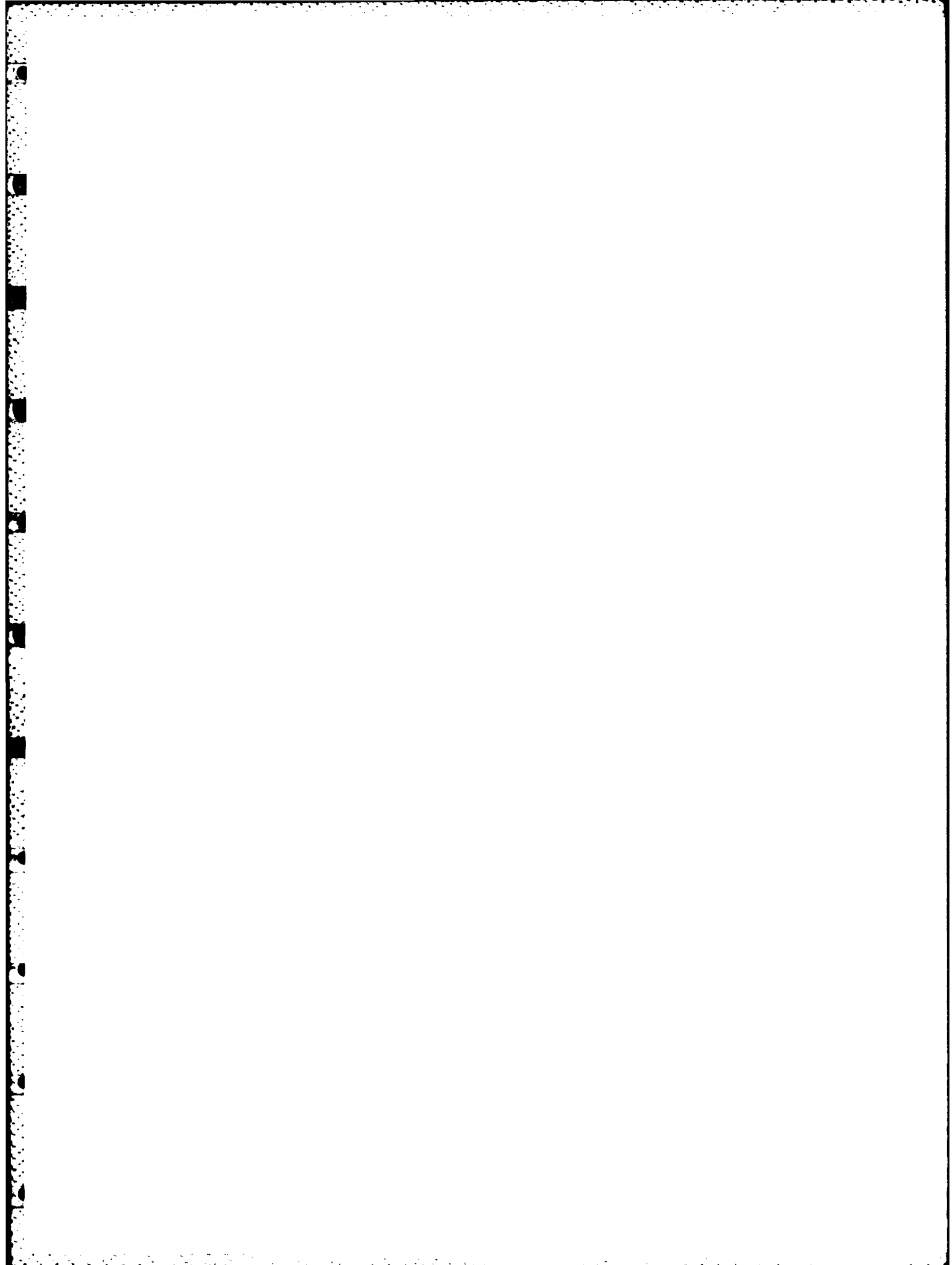
	CCSD	No. of Alarms	Scans	Percent
1st Line	W157	30	60	50
	DTG/ALARM		DTG/time/RFO	
2nd Line	53311730/RHAV		53311930/120/EMH	

Table 3-3. Requirement vs Honeywell Program  
Measure-of-Effectiveness Reports

Requirement	BMDP Program*	BMD Program**	Time Share Applications Library
$\bar{X}$	1D, 2D, 5D	1D, 2D, 1V, 13D	UNISTA, MANDSD
$\sigma$	1D, 2D, 5D	1D, 2D, 1V, 13D	UNISTA, MANDSD
Hypothesis Test, $\bar{X}$	3D	13D	STATØ2, CONDIF
Hypothesis Test, $\sigma$	3D	13D	STATØ2
Regression $\bar{X}_i$	2R, 6D	1R	POLFIT, MULFIT, COLINR
Plot $\bar{X}_i$	2R, 5D	5D	
ANOVA	2V	1V	ANOVA
%	1D (as input to WWDMS)	WWDMS	
Histogram	2D, 5D	5D	
Cell Statistics	2D, 5D	1D	
Counts	1D, 5D, WWDMS	1D, 13D	
Median	2D	WWDMS	UNISTA
Mode	2D	WWDMS	UNISTA
Data Plot	2R, 6D	5D	
Range	1D	1D	
Correlation Matrix	2R	2D	STAT12
Nonparametric	3S	Not Available	TESTUD, STATØ6

\* Prefix BMDP to Each Entry.

\*\* Prefix BMD to Each Entry.



## SECTION 4 - IMPLEMENTATION

### 4.1 DATA COLLECTION

This section outlines the recommended methods for collection, storage and transportation of the raw data and the methods of processing this data into the required report. Implicit in this discussion is the concept of a centralized authority controlling the data input. This authority would be responsible for directing the data gathering and processing effort, and for ensuring that input standards are maintained. Ideally, all raw data would flow to a focal point for preprocessing into standard formats for input to the required data base. This activity fulfills the role of a data base manager and is responsible for input to, and currency of, the data base.

Because some of the raw data will be on handwritten forms, the conversion of the data to machine readable media should take place as close as possible to the point of origin of the data. The rationale for this is twofold:

- It places the responsibility for the raw data at the source
- It assures minimal delay will be encountered from illegible input and its impossible correction by collocating the input source with this first stage of processing.

At many of the sites, this conversion will not be practical due to a lack of sufficient equipment, manpower, or both. Where this problem occurs, the raw data conversion should be accomplished at a central site which would act as a collection point for all data within its area, and would ensure a minimal amount of variation within the conversion process. These area sites would forward the preprocessed data to a central facility for storage and integration into the data base.

This structure becomes hierarchical in nature, with the individual sites reporting to an area collection point, which, in turn, reports to the data base management site. The data base management site will be responsible for collection of all data from all sites.

The personnel at this site must be highly motivated, competent professionals. They must be aware of the impact that their efforts will have on the success or failure of the entire program. Our conversations with the test team members in the Federal Republic of Germany left us with a high degree of confidence in the ability and dedication of these people.

#### 4.2 TRANSPORTATION AND STORAGE REQUIREMENTS

The central site responsible for the maintenance of the data to be input to the data base should meet the following criteria:

- Location - this site should be centrally located to all test sites. The storage site should be easily accessible to the other sites in terms of distance and access to courier facilities.
- Storage facilities - the chosen site must have adequate facilities for storage of both the raw data and the processed raw data. The environmental requirements of both punched cards and magnetic tape more fully define the physical characteristics of the storage facility.
- Processing facilities - included in this are keypunch machines, paper tape to magnetic tape conversion facilities, and the manpower required to operate and maintain them.
- Management responsibility - the chosen site should be collocated with the group responsible for the data base management.

Unfortunately, there is no single site in the Federal Republic of Germany that can fulfill all of the preceding criteria. Previous sections have indicated the difficulties inherent in the processing of the paper tape input, and have recommended that the data be processed at the Langerkopf site. Current information indicates that this site is the only one able to support this required function. In addition, Langerkopf has both the manpower and the equipment to process the JOT&E forms into card input as specified in Appendix A.

However, Langerkopf has no adequate facility for storing either the raw data or the processed and archival data. Discussions with AFCS and test team representatives have resulted in the following recommendations:

- Processing of raw data (parameter input from ATEC measurement devices, JOT&E forms conversion, outage ticket forms conversion, and generation of the DCA directory data) should be accomplished at the Langerkopf site. This site will act as the central collection facility for the raw data from the field sites. Currently, the test team members at Langerkopf are converting the outage ticket data using a standardized format established there. As part of this conversion effort, the test team members have evolved a set of procedures for accomplishing the conversion from written forms to punched card format to punched cards. As a result of this ongoing effort, the personnel are aware of the requirements and difficulties involved in such an effort. This preliminary work makes them ideally suited for the future conversion of forms from the test effort.

The collection methodology recommended in Section 3 will still have Langerkopf as its focus, with all other sites not able to process their data transporting the input to Langerkopf for conversion.

- Storage of preprocessed raw data, processed, and archival data will be at Pirmasens. This site was chosen after consultation with AFCS and the test team. Pirmasens has adequate room in the building occupied by the Test Team Director. The building is a permanent concrete structure, and control of temperature and humidity should pose little problem. The presence of the Test Director at this site will ensure that adequate accounting procedures are enforced to protect the data from loss or confusion. Use of this site will require that an area near the Test Director's office be partitioned off and supplied with card cabinets and racks for magnetic tape storage. The Test Director's office currently is in a vault-like area, separated from a large,

mostly empty room by a concrete wall and steel door. This office space is currently used by the Test Director, his Deputy, and an enlisted man. The size of this area would allow a portion of it to be partitioned off and used for the proposed storage. This would obviate the requirement for extensive partitioning of the large adjacent room. Alternately, the entire office area could be converted into a storage area, and the Test Director, his Deputy, and any clerical help could be relocated to either a section of the large adjacent room or to separate office facilities. It is stressed that the location of these offices should be physically close to the data storage area to provide adequate control over the data.

This split solution is, admittedly, not ideal. However, given the realities of the situation in the field, it is the only solution that can adequately fulfill the four criteria mentioned previously. The preprocessed data will be transported from Langerkopf on a daily basis to Pirmasens, there to be stored until the test team can take it to Ramstein for processing. After being processed, both the raw data and any product will be returned to Pirmasens.

All of the data, both raw and processed, will be maintained on magnetic tape for long term storage. Use of a common storage medium will greatly facilitate management of the archives to be maintained. Long term card storage is not recommended for three reasons. First, not all of the data will be available in card format. Second, punched cards are a bulky storage medium when compared to magnetic tape. In a worst-case situation, inefficiently using magnetic tape, it is possible to store in excess of 20,000 card images on a single reel of tape. Lastly, if at any time in the future further processing is required, magnetic tape offers a much more rapid input transfer rate than is available with punched cards.

Figure 4-1 shows the flow of data from point of origin (1) to Langerkopf (2) for preprocessing of paper tape to magnetic tape and conversion of JOT&E forms, OPS data,



etc. to punched cards. The data is then transported to Pirmasens for temporary storage (3) before it is taken to Ramstein for processing (4). After it has been processed, all data, both input and output, will be returned to Pirmasens for long term storage (5). The input data on punched cards will be maintained at Pirmasens until verification and preliminary analysis indicates that the data was entered correctly. The report output will be sent to Langerkopf for analysis (6).

In summary, after the data has been collected and converted at Langerkopf, it is transferred to Pirmasens for storage. From there it is taken to Ramstein for processing (Figure 4-2). The raw and processed data is returned to Pirmasens for storage, and the output reports are returned to Langerkopf for analysis.

#### 4.3 SECURITY

It is not within the scope of this document to recommend a security classification for the data, therefore, security will be concerned only with the physical protection of the data from loss or inadvertent destruction.

The previous paragraphs outlined a plan for utilizing a tree or hierarchical structure for collection and pre-processing of the data. Additionally, a central site has been recommended for storage of the raw and preprocessed data. This plan provides for the physical security of the data from the point of origin to the storage facility at Pirmasens (Figure 4-1). Within this plan, adequate provision can be made for instituting an audit and trace procedure to protect the data. Once the data has been pre-processed, the security emphasis shifts to the data base management group that will incorporate this data into the data base. This group will have the responsibility for all actions performed on the data base; specifically, for:

- Update - all updating of the data base will be done only by this group or under their direct supervision.
- Definition - any new item keys will be defined by this group, and a list of current item names will be maintained by them. This will prevent problems associated with doubly defining data elements.
- Assignment of "privacy locks" - the authority to use information and the method of access will be controlled by this group.

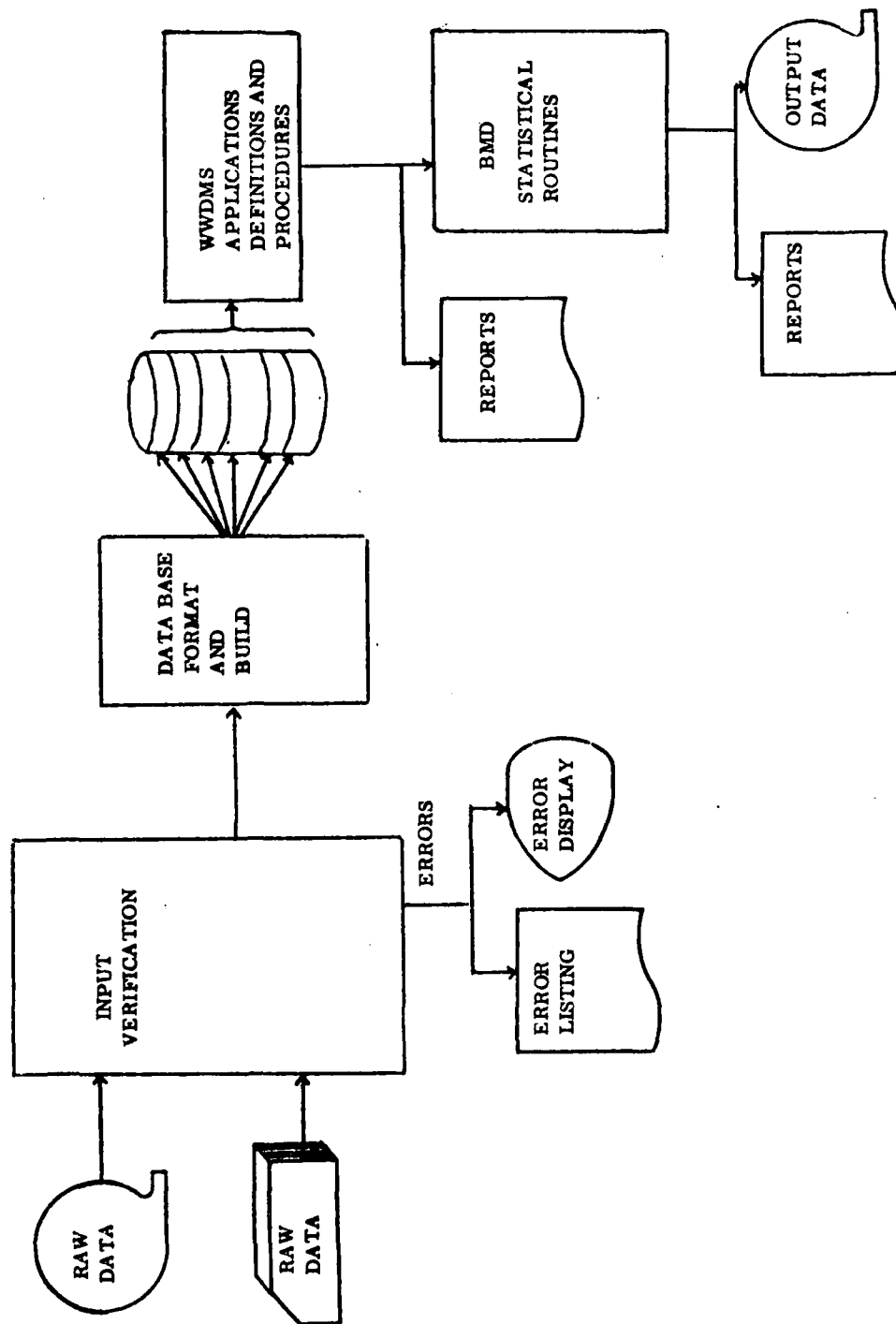


Figure 4-2. Data Flow Through the System

- In those cases where new schema are required for future reports, this group would assign names, select and structure the proper subset of the data base, and provide for alteration to the privacy locks on the data base.
- Monitor the data base - this group would use the system or data base management facilities to monitor use of the data base. They would use the various logging facilities and sampling techniques of the operating techniques of the operating system to gather data on usage, privacy breach, and potential reorganization of the data base. This input would be used by the manager of this effort to determine if the requirements of the system were being adequately met by the current data base.

#### 4.4 HARDWARE/SOFTWARE

By direction of AFCS, the computer system that will be used to process the test data will be a Honeywell 6060 WWMCCS System at Ramstein. This system is configured as follows:

- Hardware. Honeywell 6060, 256K, Central Processing System with following components:
  - (2) CRZ201 Card Reader
  - (1) CPZ201 Card Punch
  - (2) PRT201 Printers
  - (4) DSU181 Disk Units (DSS 180 Subsystem)
  - (5) DSU190A Disk Units (DSS 190 Subsystem)
  - (4) DSU190B Disk Units (DSS 190 Subsystem)
  - (6) MTH405 9TRK Tape Handlers
  - (2) MTH301 7TRK Tape Handlers
  - (1) CO8030 Operator Console
  - (1) DN355 Datanet 355 Front-End Processor
  - (23) KSR33 Teletype Consoles
  - (8) VIP786W CRT Terminals
  - (4) RLP300 Remote Line Printers

- **Software System:** The computer system software is basically the Honeywell 6000 commercial software package, release G, modified by the Government to support the WWMCCS community. The Command and Control Technical Center (formerly the Joint Technical Support Activity), Reston, Virginia, has primary responsibility for software maintenance. The software includes a slightly modified version of the GCOS III Operating System; GMAP assembly language; the usual higher order languages - COBOL, FORTRAN IV, JOVIAL, ALGOL, and SIMSCRIPT II.5; the WWMCCS Data Management System (WWDMS); the Honeywell Integrated Data Store capability; and a Time-Sharing subsystem. The Honeywell BMD software is also available. Access to the system requires a Top Secret clearance. User written programs are limited to 36K words. This is a powerful large-scale computer system, and should prove more than adequate for the processing the requirements outlined in Section 3.

It is recommended that a DSU190 disc pack be obtained for use by the test team. This recommendation is based on the Raw Data Quantity Estimate (Table 4-1) and the Parameter Data Estimation Technique (Table 4-2) supplied by AFCS. Additionally, the problems of physical security, accountability, and inadvertent destruction of data will be greatly alleviated if the test team has possession of the data base when it is not actually being used for processing.

#### 4.5 PROCESSING THE DATA

The processing of the data can be divided into four broad categories:

- **Input Verification**
- **Report Generation**
- **Data Base Structure and Load**
- **Post Report Processing.**

Table 4-1. Raw Data Quantity Estimates

<u>NAME</u>	<u>SOURCES</u>	<u>PHASE ONE QUANTITIES</u>	<u>PHASE TWO QUANTITIES</u>
Parameter	Mag Tape	min: $1.2 \times 10^6$ char/mo max: $46 \times 10^6$ char/mo	$10 \times 10^6$ char/mo $134 \times 10^6$ char/mo
Data Base	Card/Key	2000 Cards	20800
Operations	Card	2000 Cards	3000
Maintenance	Card/Tape(?)	500 Cards/mo	2000/mo
AFTEC Forms	Card/Key	250 Cards/mo	2500/mo
Special	Card/Key	2000 Cards	2000
Directory	?	3000 Records Record size probably	6500 Records 2 to 10 Cards
Estimated file size for on-line storage of data:			
	PHASE ONE	PHASE TWO	
Minimum	2M char $\cong$ 85 links	30.5M char $\cong$ 1324 links	
Maximum	11M char $\cong$ 477 links	55M char $\cong$ 2387 links	
This estimate based on storage of 20 percent of parameter data and five card images per directory record.			
181 disc holds 1150 links.			
191 disc holds 4800 links.			

Table 4-2. Parameter Data Estimation Technique

Parameter Data per 30 day period:

Parameter data quantity will be in units of characters per month since storage of data on disc will be by month. This will be an estimated maximum. The factors affecting data quantities are:

1. Rate of scan of device in units of records/minute
2. Size of record in units of characters/record
3. Time of run in minutes/run
4. Number of runs in runs/mo

Let  $R_i$  = scan rate of device i

$S_i$  = record size of report from device i

$T_i$  = run time for device i

$N_i$  = number of runs on device i

$Q_i$  = quantity of data from device i

$I_i$  = number of devices of type i

Then  $Q_i = R_i S_i T_i N_i I_i$        $Q_{total} = \sum^i Q_i$

The following list is the estimated values of each term in the equation of Q.

DEVICE	i	$R_i$	$S_i$	$T_i$	$N_i$	$Q_i/I_i$	$I_i$
IQCS	1	4	365	480	25	17,520,000	3
OQCS	2	0.2	800	480	25	1,920,000	2
DDMS	3	5	100	480	25	600,000	1
MSMS	4	0.2	1330	480	25	3,192,000	2

The value of  $I_i$  changes with time as more devices become available.

#### 4.5.1 Input Verification

Input verification programs perform two functions. First, they assure that the data entered is accurate. For each data type, a routine will be written to verify the data contained in the input. This means that there will be routines for each JOT&E form, OPS data, IQCS data, BBSA data, etc. By themselves, these routines are fairly small, therefore they will be designed to run as subroutines of a general input check program. The operator will specify parameters to the program to identify the type of data being input. Because of the structure of the JOT&E input data (See Appendix A), the JOT&E form is identified upon input. The routines that process these inputs will be able to key on the form identification field in the cards and by doing so will be able to ascertain the correct format.

- Missing Data Check - will identify data fields that should contain data in this input type but do not.
- Alphanumeric Check - will identify fields that contain the wrong type of data. Specifically, it will check for numbers in alphabetic fields, alphabets in number fields, wrong length fields, and special characters in alphanumeric fields (i.e., \$, %, \*, etc. Normally, these are keypunch errors).
- Range Checking - will correlate the input values against known constants. This involves both the alphabetic and numeric values of the fields. For the alphabetic fields, the range check ensures that the letter entered is one of the valid set for that field (i.e., the first character in a link identifier). For the numeric fields, the range check verifies that the data entered does not exceed a preset maximum and minimum value set for the type (i.e., the channel number is not greater than 12).
- Value Correlation - will correlate one input value against other input values. On the input that specifies two or more interrelated values, this procedure will assure that the data values input in one field are within the range indicated by another field on the same input set (i.e., stop time greater than start time unless date has changed, verification that if X is in the range Ni to Nj then Y is in the range Ni' to Nj').

The second function these routines perform is the generation of an error listing and the recording of the input data to master files on magnetic tape for archival storage. The error listing may be output to either a printer or to one of the CRT units. In the latter case, the text editor features of the operating system could be used to correct the error fields.

#### 4.5.2 Report Generation

Section 3 discussed in detail the report output formats, and indicated the proposed methodology. The reports will be generated by either the Honeywell BMD routines or directly from WWDMS procedures. Examples of BMD output and the required input parameters are included in Section 3.

Report processing can be divided into three broad categories:

- Scheduled reports requiring minimal arithmetic processing
- Scheduled reports requiring highly sophisticated statistical processing
- Unscheduled reports.

The majority of JOT&E and DCEC reports fall into the first category, while the majority of the Measure-of-Effectiveness reports and some DCEC reports are in the second category. Both report types fall into the third category.

For reports requiring minimal arithmetic processing, WWDMS will provide sufficient sophistication to perform the processing and format the output. For reports requiring highly sophisticated statistical processing, the BMD statistical routines will provide adequate analytical depth. WWDMS will be used for two functions:

- Simple report calculation and output
- Data base "filtering" for BMD input.

The discussion in Section 3 illustrated the requirement for utilization of the Honeywell BMD statistical routines. However, before the BMD routines can produce the desired reports, the input data must be extracted, or "filtered", from the mass of data in the system. This data must be correlated and collected in slightly different ways for each pass through the statistical routines. This extraction and correlation of the various data elements will be accomplished by the WWDMS procedures.

WWDMS is the acronym for World Wide Data Management System. It operates as a subsystem of the Series 6000 General Comprehensive Operating Supervisor (GCOS) in both time sharing and batch environment. Its capabilities include:

- Retrieval of data by Boolean criteria
- Retrieval or update based on the results of a prior retrieval
- Sorting of retrieved data on multiple fields in ascending, descending, or mixed order
- Multifile retrieval from up to 15 different files
- Performing computations on retrieved data
- Data base maintenance and update
- Restructuring of the data base
- Report generation
- Providing file security.

Because the WWDMS manuals contain copyrighted, restricted distribution information proprietary to Honeywell Information Systems, the interested reader is directed to WWMCCS documentation on WWDMS. Of particular interest are the "Data Management System Administrator's Guide", April 1974, DB98, latest revision, and "Data Management System Users' Guide", April 1974, DB97, current revision.

#### 4.5.3 Structure of the Data Base

The elements identified by the test team that will comprise the data base are:

1. JOT&E data
2. DCEC manpower data
3. A directory, by site, of links, trunks, and VF and DC circuits
4. Maintenance and OPS data
5. Parameter data gathered by the ATEC equipment.

The key to this data base structure appears to be the directory element that identifies the links, trunks, and circuits. Discussions and memos supplied by AFCS personnel indicated that the desired objective of this format was to orient the data base on a site basis. While this is efficient for the Measure-of-Effectiveness reports, it is too restrictive for the majority of reports.

A great deal of work has been done by CSC to define the interrelationship of the directory items. This effort was integral to the development of the data base associated with the software under development for Task C. In this effort, the relationship between the following was defined:

- Links
- Routes
- Supergroups and groups
- DCS trunks
- Channels
- Subchannels
- VFCT
- CCSD.

These elements were defined in a schema so that given a group, links, channels, subchannels, etc., associated with that group could be identified. This schema enabled the software to determine all groups on a route, all channels on a route, all routes on a link,

and so forth. The actual data base for Task C was developed under the constraint imposed by the Data Base Management System (DBMS) used. This DBMS, as do all others, has certain unique restrictions in its design, and would not be directly reusable on any other machine. Because many of the elements within this data base structure were defined for the unique requirements of the Task C algorithms, the complete data base is not recommended for this effort. However, the basic concepts of the interrelationships and the data base layout established while developing this data base should significantly contribute to a reduction in the amount of time required to specify this portion of the data base design.

The design of the data base has been identified as the most critical aspect of the task. An inefficient design can easily result in an unacceptable increase in processing time, storage space requirements, and complexity of applications programs. The crucial points to be resolved are:

- Definition of data files necessary for data base
- File type (sequential, indexed, sequential, integrated) best suited for each file
- Interrelationship of data files in data base
- Organization of records in each file.

Further, as data base design is an iterative process, time will be included at the halfway or two thirds point for reevaluation and probable partial redesign of the data base in light of new requirements and problems encountered.

Concurrent with the design of the data base, as the relationships between the data files, entry names, and "virtual records" required by the WWDMS procedures become clear, the WWDMS Application Definitions will be written. These Application Definitions define the structure of the data to be processed by the WWDMS procedures. In effect, they redefine the relationship between the elements in the data base. As mentioned earlier, it is felt that the file interrelation specified by the test team is insufficient for all applications. The recommendation at this time on the data base structure is that the individual items be

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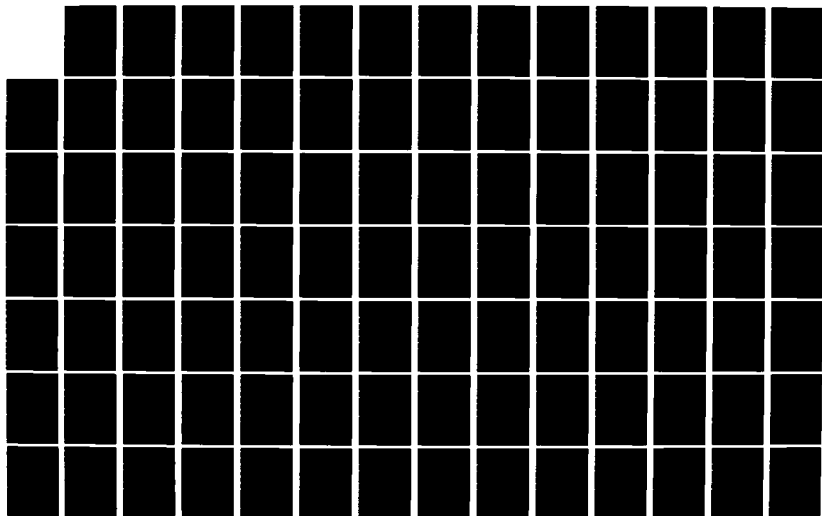
IMPLEMENTATION PLAN FOR DATA COLLECTION REDUCTION AND  
ANALYSIS IN SUPPORT. (U) COMPUTER SCIENCES CORP FALLS  
CHURCH VA MAY 76 F23613-74-C-0014

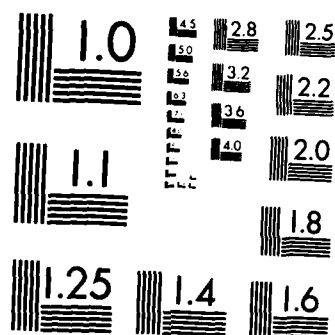
2/4

UNCLASSIFIED

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NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

entered in the data base with key field identifiers and no fixed relational connectivity for any items other than the DCA directory data. The result of this recommendation would be a multiple number of files, each with its own internal relationships, that would be processed by WWDMS to create a "virtual file" containing "virtual records" for input to either BMD or the computation and report portions of WWDMS. The concept of "virtual records" is more fully explained in the WWDMS documentation referenced earlier. The net effect to the user is that the data records appear to be interrelated in exactly the required way. To effect this without WWDMS, the data base storage requirements would be two to three orders of magnitude larger than envisioned. This would result from the duplication many times over of the input data to satisfy the connectivity requirements. With WWDMS Applications Definitions, the data need be defined only once on the data base, and the connectivity of the various elements is external and independent to the way they are stored. This independence of the connectivity makes modification of the connectivity a trivial task when compared to the alternative of redefining an entire data base.

#### 4.5.4 Post Report Processing

Once the processing of the data by both WWDMS and BMD has completed, post-processing routines will provide for data preservation which takes two forms. First, they will generate the printed reports as specified in the input descriptions supplied to the programs. Additionally, they will generate magnetic tape output files for archival purposes. These magnetic tape files will contain the same data as the printed reports. By using this medium, two objectives are fulfilled. First, the amount of archival storage is reduced. Magnetic tape storage of reports is much more efficient than retention of printed reports. Second, and equally important, the magnetic tape retention of the printed output allows the future printing of the same reports. This ability to produce multiple copies of a report at some time in the future will negate the necessity of producing multiple copies during the production run.

WWDMS provides for a further post-processing output for the data base managers. This output is an "audit trail". An audit trail is a trace through the data base of the

activity which has taken place. It provides input to the data base managers concerning utilization of the data, attempted security violations, and a trace of what was updated, added, or deleted. This information can be used by the data base managers to determine the efficiency of the data base file structure, the activity on a file or on the data base, etc.

The audit trail features of WWDMS provide for a way of backtracking in the event of a catastrophic hardware failure. With the audit trail, it is possible to determine which records had already been updated, deleted, etc. at the time of the failure. This knowledge will prevent the problems of dual updating, duplicate records appearing in the data base, etc.

APPENDIX A - TASK D DATA GATHERING AND PREPARATION FORMATS

## APPENDIX A - TASK D DATA GATHERING AND PREPARATION FORMATS

### A. 1 INTRODUCTION

This Appendix contains a listing of those AFTEC forms which have been deemed convertible to automated data processing and includes instructions for their transferral onto the selected card formats. Each form has a typical line of data entered on it so that an example of a completed format card could be provided. These sample cards follow both the AFTEC Form and the Transfer Instructions for that form. Table A-1 lists the form number, its card format, and the page on which it can be found.

There are 50 AFTEC forms to be converted to ADP and six card formats, one of which will fit a given form. For card assignments, see Table A-2.

### A-2 GENERAL INSTRUCTIONS

This paragraph contains some general rules which should be followed in completing all cards.

The last three items of each card are reserved as control elements. Item 78 (a letter from A to H) will identify the card format that is being used. Item 79 (a letter designator from A to Z) will identify the particular AFTEC form whose entries will appear on the card. Item 80 (either the number "1" or "2") will be used for those forms which require multiple cards to completely enter all of its data.

All numeric measurement data should be right-justified unless otherwise specified. For example, if the measurements -23.5 and 2600 are to be entered into two eight-character fields, they should appear as follows:

			-	2	3	.	5
--	--	--	---	---	---	---	---

and

					2	6	0	0
--	--	--	--	--	---	---	---	---

The first three places are reserved for the exponent should the number happen to be in scientific notation. The exponent should also be right-justified. A number such as  $-1.6 \times 10^{-9}$ , for example, would be entered as follows:

	-	9		-	1	.	6
--	---	---	--	---	---	---	---

(Exponent )( Mantissa )

In practically all cases, however, the exponent will be zero.

- c. All alphabetic or alphanumeric entries should be left-justified.
- d. Instructions for entering date time groups are contained in Table A-5

Table A-1. Card/Form Cross-Reference

AFTEC Form Number	Card Format	Page
94	D	A-69
97	D	A-69
103	D	A-69
125	A	A- 9
128	A	A-12
129	B	A-15
130	B	A-18
130A	B	A-21
131	B	A-24
132	D	A-69
133	D	A-69
135	D	A-69
137	D	A-69
138	C	A-27
139	C	A-30
140	B	A-33
141	B	A-36
142	B	A-39
143	B	A-42
144	B	A-45
145	B	A-48
146	B	A-51
147	D	A-69
148	D	A-69
150	E	A-54
151	H	A-57
157	B	A-60
158	C	A-63
160	A	A-66
161	D	A-69
162	E	A-75
162A	E	A-78
163	E	A-81
164	D	A-69
165	B	A-84
166	H	A-87
166A	H	A-91
166B	B	A-95
168	B	A-98
172	B	A-101
173	B	A-104
173A	B	A-107
173B	B	A-111

Table A-1. Card/Form Cross-Reference (Continued)

AFTEC Form Number	Card Format	Page
173C	B	A-114
173D	B	A-117
174	B	A-120
175	B	A-123
176	B	A-126
177	B	A-129
178	B	A-132

Table A-2. Card Format Assignments


	CARD FORMAT							
	A	B	C	D	E	F	G	H
<b>AFTEC FORMS</b> 	125	129	138	94	150	Not Used	Not Used	151
	128	130	139	97	162			166
	160	130A	158	103	162A			166A
		131		132	163			
		140		133				
		141		135				
		142		137				
		143		147				
		144		148				
		145		161				
		146		164				
		157						
		165						
		166B						
		168						
		172						
		173						
		173A						
		173B						
		173C						
		173D						
		174						
		175						
		176						
		177						
		178						

Table A-3. Site Codes

The following is an abbreviated list of sites and codes within the JOT&E test configuration.

<u>Site</u>	<u>DCS Code</u>
Bann	BAN
Croughton	CRO
Coltano	CLO
Donnersberg	DON
Feldberg	FEL
Heidelberg	HDG
Hillingdon	HIN
Hohenstadt	HST
Langerkopf	LKF
Lindsey	LSY
Muhl	MUL
Mt. Limbara	MBA
Mt. Vergine	MRE
Pirmasens	PMS
Rhein Main	RMN
Schoenfeld	SCH
Stuttgart	SGT
Zugspitze	ZUG

Table A-4. ATE Codes

<u>ATEC Equipment</u>	<u>Code</u>
BBSA	B
DDMS	D
IQCS	I
I/OQCS	Q
MSMS	M
MTS (ARS) both (MAC) and (MAD)	A
MTS (ADU)	U
MTS (BM)	E
MTS (ILSC)	L
MTS (MAC)	C
MTS (MAD)	J
MTS (NLG)	G
MTS (NSF)	F
MTS (PM)	P
MTS (RPS)	R
MTS (SLG)	S
MTS (TSS)	T
NSS	N
OQCS	O

Special Instructions

For all "ATE Type" fields apply the following rules:

1. The first item indicates the ATEC equipment used in a given test (e.g., an IQCS)
2. The second item indicates whether a second piece of ATEC equipment was used in the same test (e.g., an MTS (TSS) used in conjunction with an OQCS)
3. The third item indicates whether a third piece of ATEC equipment was used in the same test (e.g., an NSS on control of two ATES)
4. If the data on the form is manual, do not use this field.

Table A-5. Conversion from Calendar Day to Raday

Month	Monthly Addition Factor	
	Normal Years	Leap Years
January	0	0
February	31	31
March	59	60
April	89	90
May	120	121
June	150	151
July	181	182
August	212	213
September	242	243
October	273	274
November	304	305
December	334	335

### Special Instructions

On any form that contains time information, the following rules should apply:

1. Assume, unless otherwise specified, that the time given is in Zulu time. If not, it must be converted.
2. If only the time is given for some form entry, use the applicable date listed on the form to derive the first four digits of the date time group. The first digit will indicate the year (i.e., 1976 - enter a 6; 1975 - enter a 5). The next three digits are the radio day. The table indicates how many days should be added to the given date to get the radio day.
3. All "TOTAL TIME" entries should be converted to minutes.

STATION DTG		LKF 52170500		TEST TEAM MEMBER ATE TYPE		A. K. IOQCS				
		ATEC SYSTEM				MANUAL SYSTEM				
CCSD	SCANNER ADDRESS	SCANNING LEVEL	NO. OF ATE ALARMS BY COLOR	ATE PARAMETER ALARMED	DATA BASE CONF #	TIME OF FIRST ALARM	TIME DETECTED	DATA SOURCE	ACTION TAKEN	REMARKS
DUUC9AAN	0051	1	5 Red; 8 Amber	AV	10	52170516	52170600	Customer Complaint	Coordination	

A-9

AFTEC FORM NO. 125		CARD NO. A	TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION	
Station	A	Site	See Table A3 for Site Codes	
ATE Type	B	ATE Type	See Table A4 for Abbreviations	
CCSD	C	CCSD Number	Use Last Four Digits	
Scanner Address	D	Scanner Address	Direct Transfer	
Scanning Level	E	Scanning Level	Direct Transfer	
ATE Parameter Alarmed	F	ATE Parameter Alarmed	Direct Transfer	
No. of ATE Alarms by Color	I	No. of Amber Alarms	Direct Transfer	
No. of ATE Alarms by Color	L	No. of Red Alarms	Direct Transfer	
Data Base Conf. No.	M	Data Base Conf. No.	Direct Transfer	
Time of First Alarm	N	DTG of First Alarm	See Table A5 for Instructions	
Data Source	Q	Source of Manual Data	Code Meaning	
			C Customer Complaint	
			E Equipment Alarm	
			Q Quality Control Test	
			T Trending	
			A Adjacent TCF	
			K Outage Ticket	
			O Other	
Action Taken	R	Manual Actions Taken	Code Meaning	
			1 Coordination	
			2 Patching (restoral or rerouting)	
			3 Testing (measurement made due to extraordinary condition)	
			4 Monitoring	
			5 Reporting	
			6 Other	
			Note: these numbers should be right-justified; there is room for three action taken codes	
			In this field should multiple actions be listed.	
Time Detected	S	DTG of Manual Detection	See Table A5 for instructions	
Remarks	T	Problems Addressed	Code Meaning	
			S System problem Indicated	
			C Circuit Problem Indicated	
			Code Meaning	
			Item 78 A Card ID	
			Item 79 A Form ID	
			Item 80 Not Used	
	Y	Control		

Figure A-1. Data Transferral - AFTEC Form 125 Sheet 2 of 3



SITE <u>DON</u>		TEST PERIOD <u>Aug 4, 1975</u>						
ATE TYPE <u>MSMS</u>		TEST TEAM MEMBER <u>A.K.</u>						
VFCT CCSD	SCANNER ADDRESS	SUBCHAN NUMBER	ALARM COLOR	PARAM ALARMED	TIME DETECTED	TYPE OF PROBLEM INDICATED *	COORDINATION	
							TRANSMITTER TERMINAL	RECEIVER TERMINAL
DTXX6F02	0103	12	Red	EM	52170516	4,6	DON / No	PMS / ATEC / No
* Use Codes: (1) Input at TX End (2) TX Keyer (3) RX Converter (4) Transmission Path (5) Not Confirmed (6) Confirmed								

AFTEC FORM NO. 128		CARD NO. A		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION			
Site	A	Site	See Table A3 for Site Codes		
ATE Type	B	ATE Type	See Table A4 for Abbreviations		
VFCT CCSD	C	CCSD Number	Use Last Four Digits		
Scanner Address	D	Scanner Address	Direct Transfer		
Subchannel Number	E	Subchannel Number	Direct Transfer		
Param Alarmed	F	Parameter Alarmed	Direct Transfer		
Alarm Color	H	Alarm Color	Code	Meaning	
			A	Amber	
			AH	Amber High	
			AL	Amber Low	
			AT	Amber Trending	
			R	Red	
			RH	Red High	
			RL	Red Low	
			RT	Red Trending	
Time Detected	N	DTG Detected	See Table A5 for Instructions		
Type of Problem Indicated	O, P	Problem Indicated	Direct Transfer (Codes on bottom of Form 128)		
Coordination	U	Coordination	Item 63	Use "Y" for yes, "N" for no and "U" for unknown to indicate if operator at the transmit site was aware of the problem.	
			Item 64	Use "Y" for yes, "N" for no and "U" for unknown to indicate if ATEC operator at the receive site was aware of the problem.	
			Item 65	Use "Y" for yes, "N" for no and "U" for unknown to indicate if Manual operator at the receive site was aware of the problem.	
Transmitter Terminal	V	Transmitter Terminal	See Table A3 for Site Codes		
Receiver Terminal	W	Receiver Terminal	See Table A3 for Site Codes		
	Y	Control	Code	Meaning	
			Item 78	A	Card ID
			Item 79	B	Form ID
			Item 80		Not Used

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625
626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775
776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875
876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925
926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950
951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975
976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000

Figure A-2. Data Transferral - AFTEC Form 128 Sheet 3 of 3

SITE		FEL		TESTER A.K.			
DATE		November 13, 1975					
CCSD	FROM STATION	TO STATION	ATEC		METHOD		REMARKS
			TEST MODE	START TIME	STOP TIME	START TIME	
9AWN	SCH	DON	Automatic	53180510	53180520		

AFTEC FORM NO. 129		CARD NO. B		TRANSFER INSTRUCTIONS																					
ITEM	FIELD	DESCRIPTION																							
Site	A	Site			See Table A3 for Site Codes (If test mode indicates an automatic mode, Item 4 should be O and Item 5 T. If test mode is semi-automatic, Item 4 should be O. If test mode is manual do not use this field).  Use Last Four Digits <table><tr><td>Code</td><td>Meaning</td></tr><tr><td>A</td><td>Times on this card are automatic</td></tr><tr><td>S</td><td>Times on this card are semi-automatic</td></tr><tr><td>M</td><td>Times on this card are manual</td></tr></table> See Table A5 for Instructions  See Table A5 for Instructions  See Table A3 for Site Codes  See Table A3 for Site Codes <table><tr><td>Item 78</td><td>Code</td><td>Meaning</td></tr><tr><td>Item 79</td><td>B</td><td>Card ID</td></tr><tr><td>Item 80</td><td>A</td><td>Form ID</td></tr><tr><td></td><td></td><td>Not Used</td></tr></table>	Code	Meaning	A	Times on this card are automatic	S	Times on this card are semi-automatic	M	Times on this card are manual	Item 78	Code	Meaning	Item 79	B	Card ID	Item 80	A	Form ID			Not Used
Code	Meaning																								
A	Times on this card are automatic																								
S	Times on this card are semi-automatic																								
M	Times on this card are manual																								
Item 78	Code	Meaning																							
Item 79	B	Card ID																							
Item 80	A	Form ID																							
		Not Used																							
CCSD	G	CCSD Number																							
Test Mode	H	Test Mode																							
Manual (or ATEC) Start Time	K	DTG Start																							
Manual (or ATEC) Stop Time	N	DTG Stop																							
From Station	O	TX Station																							
To Station	T	RX Station																							
	V	Control																							

Figure A-3. Data Transferral - AFTEC Form 129 Sheet 2 of 3





AFTEC FORM NO. 130		CARD NO. B	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	See Table A: for Site Codes
	B	ATE Type	<p>Code                      Meaning</p> <p>Item 4                    B                      Indicates BBSA Test</p> <p>Item 5                    N                      Indicates NBS Control</p> <p>Note: If test mode is manual, do not use the field</p>
Link No.	D	Link Number	Direct Transfer
SG/GP	E	Super Group Number	Direct Transfer
	F	Group Number	Direct Transfer
	H	Test Mode	<p>Note: Two cards will have to be filled out, one for link data and one for group data. Fields A, B, D, H &amp; K will be identical on both. For group data set Item 80-2 and enter the SG/GP numbers in fields E and F; otherwise leave fields E and F blank and set Item 80-1.</p>
Start Time	K	DTG Start	Code                      Meaning
Manual (or BBSA) Stop Time	N	DTG Stop	<p>A                      Indicates times and measurements on this card are automatic</p> <p>M                      Indicates times and measurements on this card are manual</p>
FROM Station	O	TX Station	See Table A5 for Instructions
BBL Measured	P	Measurement Data	See Table A5 for Instructions
Manually or with BBSA or Group Pilot Level			See Table A3 for Site Codes.
BBL Standard or Group Pilot Level Standard	S	Measurement Data	Direct Transfer
TO Station	T	RX Station	Note: For Item 80 = 2 enter group pilot level . (For first card (Item 80-1) Enter BBL Measurement).
	V	Control	Direct Transfer
			Note: For Item 80 = 2 enter group pilot level standard (For first card (Item 80-1) Enter BBL Standard).
			See Table A3 for site codes
			Code                      Meaning
			Item 76                    B                      Card ID
			Item 79                    B                      Form ID
			Item 80                    1                      Specifies measurements on fields P and S as BBL and BBL Standard respectively
			2                      Specifies measurements on fields P and S as pilot level and pilot level standard.

Figure A-4. Data Transferral - AFTEC Form 130 Sheet 2 of 3



[illegible]

AFTEC FORM NO. 130A		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site	A	Site		See Table A3 for Site Codes	
XMIT or REC	C	Transmit or Receive		Code T Transmit was checked R Receive was checked B Both checked	
Link Number	D	Link Number		Direct Transfer (if applicable)	
	H	Test Mode		Code A Indicates times on this card are automatic M Indicates times on this card are manual	
Total Number of Links	J	Total Number of Links Tested		Direct Transfer	
Manual (or ATEC) DTG Start	K	DTG Start		See Table A5 for Instructions	
Manual (or ATEC) DTG Stop	N	DTG Stop		See Table A5 for Instructions	
Manual (or ATEC) Total Time	O	Total Time		Direct Transfer	
Date	P	DTG of Test		Note: For the version of Form 130A with only manual and automated total times enter the date of form in this field. See Table A5 for Instructions. (left justified)	
	V	Control		Code B Card ID C Form ID Item 78 Item 79 Item 80 Not used	

Figure A-5. Data Transferral - AFTEC Form 130A Sheet 2 of 3



SITE: <u>FEL</u>		ALARM TYPE:						
		INJECTED <u>X</u> NON-INJECTED						
TYPE OF ALARM	DIG OF ALARM	ARS CONNECTED	EXISTING STATION ALARM CONNECTED	MAJOR OR MINOR ALARM	ALARMS SYSTEM USED TO IDENTIFY ALARM (1)	ALARM INITIALLY IDENTIFIED (2)	DIG WHEN ALARM WAS CORRECTLY IDENTIFIED	REMARKS (3)
TX Failure	53180920	X		Major	ARS	TX Failure	53180950	

NOTES: (1) Enter ARS, Existing, or Both.  
 (2) Enter controller's initial assessment of alarm condition.  
 (3) During real alarm phase controller's initials will be included in remarks.

AFTEC FORM NO. 131		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site  ARS, Existing Station Alarm Connected  Type of Alarm, Injected or Non-Injected, Major or Minor Alarm	A	Site	See Table A3 for Site Codes		
	B	ATE Type	Item 4; Use A to indicate MTS (ARS) Note: If test mode is manual, do not use this field.		
	H	Test Mode	Code    Meaning A    ARS M    Existing System B    Both		
	J	Alarm Type	Code    Meaning Item 25 C    Circuit Failure E    Equipment Failure G    Group (Group Pilot) Failure H    Channel Failure L    Link Failure O    Other Failure R    Receiver Failure S    Supergroup Failure T    Transmitter Failure  Item 26 I    Injected N    Non-Injected  Item 27 A    Major I    Minor		
DTG Of Alarm  Alarm Initially Identified  Alarm System Used to Identify Alarm  DTG When Alarm was Correctly Identified	P	DTG Of Alarm	See Table A5 for Instruction		
	Q	Initial Assessment	See Alarm Type Codes Above		
	R	Alarm Detection Method	Code    Meaning A    ARS M    Existing System B    Both		
	S	DTG Identification	See Table A5 for Instructions		
	V	Control	Code    Meaning Item 78 B    Card ID Item 79 M    Form ID Item 80    Not Used		

Figure A-6. Data Transferral - AFTEC Form 131 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
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177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
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243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
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661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682
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793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814
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947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012
1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034
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1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
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1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144
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1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210
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1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276
1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298
1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
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1431	1432	1433	1434	1435	1436	1437	1438	1439													

# DDMS BAUD DETERMINATION EVALUATION

SCAN ADD	DTG WHEN MONITORED	ASSIGN DCS BAUD RATE	MAN RECOG BAUD RATE	ATEC RECOG BAUD RATE	ATEC BAUD RATE RECOGNITION VALUES				KW-26 CKT	REMARKS
					BE	RD	ST (1)	WAS ATEC CORRECT		
0057	52170510	10,000	10,000	10,000	00%	00%	00%	YES		

(1) Spurious Transitions

FORM ENTRY DESCRIPTION 138		CARD NO. C	TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION		
Site	A	Site	See Table A3 for Site Codes	
KW-26 CKT	B	ATE Type	Item 4 - Use D to indicate DDMS	
Scan Add	C	CCSD Number	If provided, use last four digits	
Assigned Baud Rate	D	Scanner Address	Direct Transfer	
MAN Recognized Baud Rate	E	Assigned Baud Rate	Direct Transfer	
	F	Manually Recognized Baud Rate	Direct Transfer	
	G	ATEC Recognized Baud Rate	Direct Transfer	
DTG When Monitored	K	DTG When Monitored	See Table A5 for Instructions	
ATEC Correct?	L	ATEC Correct?	Use "Y" for yes and "N" for no	
BE Recognition Value	O	Measurement Data	Direct Transfer	
RD Recognition Value	P	Measurement Data	Direct Transfer	
SI Recognition Value	Q	Measurement Data	Direct Transfer	
	U	Control		
			Code	Meaning
			Item 78 C	Card ID
			Item 79 A	Form ID
			Item 80	Not Used

Figure A-7. Data Transferral - AFTEC Form 138 Sheet 2 of 3



TYPE TRANSMISSION LINK <u>SM</u>									
ATEC EQUIPMENT <u>IQCS</u>									
TRAFFIC TYPE	ATE PARAMETER	ALARM THRESHOLDS					LINK QUALITY		
		CG	AH	RH	AL	RL	GOOD	MARGINAL	BAD
VON IST	AV	22.0	24.0	26.0	20.0	18.0	X		

Figure A-8. Data Transferral - AFTEC Form 139 Sheet 1 of 3

AFTEC FORM NO. 139		CARD NO. C	TRANSFER INSTRUCTIONS																												
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION																												
Site ATEC Equipment Traffic Type	A	Site		See Table A3 for Site Codes																											
	B	ATE Type		See Table A4 for Codes																											
	R	Traffic Type		<table><tr><td>Code</td><td>Meaning</td></tr><tr><td>VU</td><td>Von User</td></tr><tr><td>VO</td><td>Voice</td></tr><tr><td>SP</td><td>Spare</td></tr><tr><td>VI</td><td>Von ET</td></tr><tr><td>VX</td><td>Von (Silk Paras., Von O/W, Von Net)</td></tr><tr><td>DT</td><td>Data</td></tr><tr><td>SE</td><td>SEVOCOM</td></tr><tr><td>DI</td><td>Din ET</td></tr><tr><td>VT</td><td>VFCI</td></tr><tr><td>DU</td><td>Din User</td></tr><tr><td>FX</td><td>Faximile</td></tr><tr><td>DC</td><td>DC</td></tr><tr><td>OT</td><td>Other</td></tr></table>	Code	Meaning	VU	Von User	VO	Voice	SP	Spare	VI	Von ET	VX	Von (Silk Paras., Von O/W, Von Net)	DT	Data	SE	SEVOCOM	DI	Din ET	VT	VFCI	DU	Din User	FX	Faximile	DC	DC	OT
Code	Meaning																														
VU	Von User																														
VO	Voice																														
SP	Spare																														
VI	Von ET																														
VX	Von (Silk Paras., Von O/W, Von Net)																														
DT	Data																														
SE	SEVOCOM																														
DI	Din ET																														
VT	VFCI																														
DU	Din User																														
FX	Faximile																														
DC	DC																														
OT	Other																														
Type Transmission Link	L	Link Type		<table><tr><td>Code</td><td>Meaning</td></tr><tr><td>1</td><td>Short Traps</td></tr><tr><td>2</td><td>Long Traps</td></tr><tr><td>3</td><td>Short Microwave</td></tr><tr><td>4</td><td>Long Microwave</td></tr><tr><td>5</td><td>Cable</td></tr></table>	Code	Meaning	1	Short Traps	2	Long Traps	3	Short Microwave	4	Long Microwave	5	Cable															
Code	Meaning																														
1	Short Traps																														
2	Long Traps																														
3	Short Microwave																														
4	Long Microwave																														
5	Cable																														
Link Quality	M	Link Quality		<table><tr><td>Code</td><td>Meaning</td></tr><tr><td>G</td><td>Good</td></tr><tr><td>M</td><td>Marginal</td></tr><tr><td>B</td><td>Bad</td></tr></table>	Code	Meaning	G	Good	M	Marginal	B	Bad																			
Code	Meaning																														
G	Good																														
M	Marginal																														
B	Bad																														
ATE Parameter CG Threshold AH Threshold EH Threshold AL Threshold EL Threshold	N	ATE Parameter		Direct Transfer																											
	O	Measurement Data		Direct Transfer (Center Green Value)																											
	P	Measurement Data		Direct Transfer (Amber High Value)																											
	Q	Measurement Data		Direct Transfer (Red High Value)																											
	R	Measurement Data		Direct Transfer (Amber Low Value)																											
	S	Measurement Data		Direct Transfer (Red Low Value)																											
	U	Control																													
			<table><tr><td>Item 78</td><td>Code</td><td>Meaning</td></tr><tr><td>Item 79</td><td>C</td><td>Card ID</td></tr><tr><td>Item 79</td><td>B</td><td>Form ID</td></tr><tr><td>Item 80</td><td></td><td>Not Used</td></tr></table>	Item 78	Code	Meaning	Item 79	C	Card ID	Item 79	B	Form ID	Item 80		Not Used																
Item 78	Code	Meaning																													
Item 79	C	Card ID																													
Item 79	B	Form ID																													
Item 80		Not Used																													

Figure A-8. Data Transferral - AFTEC Form 139 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
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168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188
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252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272
273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293
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315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335
336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356
357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377
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630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
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798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818
819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839
840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881
882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902
903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923
924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944
945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965
966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986
987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007
1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028
1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049
1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070
1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091
1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133
1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154
1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175
1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196
1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217
1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238
1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259
1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280
1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301
1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322
1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343
1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385
1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406
1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427
1428	1429	1430	1431	1432	1433	1434	1435	1436	1437</											



AFTEC FORM NO. 140		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site		A	Site	See Table A3 for Site Codes	
		B	ATE Type	Code	Meaning
				L	MTS(ILSC)
				N	NSS Control
Link No.		D	Link Number	Not: If test mode is Non-ILSC, do not use this field.	
CCSD		G	CCSD Number	Direct Transfer	
		H	Test Mode	Use last four digits. Note: Two cards will have to be filled out, one for link data and one for circuit data. Fields A, B, D, H & K should be identical on both. For circuit data, enter the CCSD in field G and set item 80=2, otherwise, set item 80=1 and leave field G blank.	
				Code	Meaning
				A	Indicates times and measurements on this card are automatic
				M	Indicates times and measurements on this card are non-ILSC
Non-ILSC (or ILSC) Start Time		K	DTG Start	See Table A5 for Instructions	
Non-ILSC (or ILSC) Stop Time		N	DTG Stop	See Table A5 for Instructions	
Non-ILSC (or ILSC) Averaged LINK ICN or Level		P	Measurement Data	Direct Transfer	
Non-ILSC (or ILSC) 3 KC Noise		S	Measurement Data	Note: For item 80 = 2, enter ILSC or Non-ILSC circuit level, otherwise enter avg. ICN	
Manual PMP ICN		U	Measurement Data	Direct Transfer	
		V	Control	Note: This field is only used for item 80 = 2, otherwise do not use this field.	
				Note: Use only for item 80=1 and Manual Test Mode, otherwise do not use this field.	
				Code	
				Item 78	B Card ID
				Item 79	D Form ID
				Item 80	1 Specifies field P as AVG LINK ICN
					2 Specifies fields P and S as level and 3KC noise measurements respectively.

Figure A-9. Data Transferral - AFTEC Form 140 Sheet 2 of 3





AFTEC FORM NO. 141		CARD NO. B	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	See Table A3 for Site Codes  Item 4 R MTS(RPS) Item 5 N NSS Control  Note: If test mode is manual, do not use this field.  Direct Transfer  Code Meaning A Indicates times and measurements on this card are automatic M Indicates times and measurements on this card are manual  See Table A5 for Instructions See Table A5 for Instructions  Direct Transfer. Leave Blank if Test Mode is Manual. Direct Transfer. Leave Blank if Test Mode is Manual.  Direct Transfer  Code Meaning Item 78 B Card ID Item 79 E Form ID Item 80 Not Used
	B	ATE Type	
Link Number	D	Link Number	
	H	Test Mode	
	K	DTG Start	
Manual (or RPS) Start Time	N	DTG Stop	
Manual (or RPS) Stop Time	P	Measurement Data	
Forward RPS Measured	S	Measurement Data	
Reflect RPS Measured	U	Measurement Data	
RPS Ratio (or Manual VSWR)	V	Control	





AFTEC FORM NO. 142		CARD NO. B	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	See Table A3 for Site Codes  Item 4      Code      Meaning C      MTS (MAC) Item 5      N      NSS Control  Note: If test mode is manual, do not use this field.  Direct Transfer  Code      Meaning A      Indicates times and measurements on this card are automatic M      Indicates times and measurements on this card are manual  See Table A5 for instructions  See Table A5 for instructions  Direct Transfer  Direct Transfer  Direct Transfer  Note: Use this field for Manual Test Mode only, otherwise do not use.  Item 78      Code      Meaning Item 79      B      Card ID Item 80      F      Form ID Not Used
	B	ATE Type	
Link No.	D	Link Number	
	H	Test Mode	
	K	DTG Start	
Manual (or MTS (MAC)) DTG Start	N	DTG Stop	
Manual (or MTS (MAC)) DTG Stop	P	Measurement Data	
Manual (or MTS (MAC)) TX PWR	S	Measurement Data	
Manual (or MTS(MAC)) RSL	U	Measurement Data	
Manual PMP RSL	V	Control	

Figure A-11. Data Transferral - AFTEC Form 142 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286
287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308
309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374
375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396
397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418
419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462
463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506
507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572
573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638
639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682
683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704
705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726
727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748
749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814
815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836
837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858
859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902
903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946
947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012
1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034
1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078
1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122
1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144
1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166
1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210
1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254
1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276
1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298
1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													



AFM FORM NO. 143		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
MUHL/LKF	A	Site		See Table A3 for Site Codes	
	B	ATE Type		Item 4 Item 5 Item 6	Code P Q N  Meaning MTS(PM) I/OQCS NSS Control
Link No.	D	Link Number		Note: If test mode is manual do not use the field	
	H	Test Mode		Direct Transfer	
Manual (or PM) DTG Start	K	DTG Start		Code A M	Meaning Indicates times and measurements on this card are automatic Indicates times and measurements on this card are manual
	N	DTG Stop		See Table A5 for Instructions	
Test Channel PJ	O	Measurement Data		See Table A5 for Instructions	
Test Channel FR	P	Measurement Data		Direct Transfer	
PM or Manual PJ	T	Measurement Data		Direct Transfer	
PM or Manual FR	U	Measurement Data		Direct Transfer	
	V	Control		Item 78 Item 79 Item 80	Code B G  Meaning Card ID Form ID Not Used



## BASEBAND MONITOR SLOTTED NOISE TEST

**LINK M0067**

[illegible]

AFTEC FORM NO. 144		CARD NO. B	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	<p>See Table A3 for Site Codes</p> <p>Code      Meaning</p> <p>Item 4    E      MTS (BM)</p> <p>Item 5    N      NSS Control</p> <p>Note: If test mode is manual, do not use this field.</p> <p>Code      Meaning</p> <p>R          Receive</p> <p>Direct Transfer</p> <p>Code      Meaning</p> <p>A          Indicates times on this card are automatic</p> <p>M          Indicates times on this card are manual</p> <p>See Table A5 for Instructions</p> <p>See Table A5 for Instructions</p> <p>Direct Transfer</p> <p>Direct Transfer</p> <p>Direct Transfer</p> <p>Code      Meaning</p> <p>Item 78    B      Card II</p> <p>Item 79    H      Form ID</p> <p>Item 80              Not Used</p>
	B	ATE Type	
	C	TX or RX	
Link Number	D	Link Number	
	H	Test Mode	
	K	DTG Start	
Manual Time (or BM) DTG Start	N	DTG Stop	
Manual Time (or BM) DTG Stop	P	Measurement Data	
BM 36KHz or Manual NPR	S	Measurement Data	
BM 2.4MHz or Manual AVG ICN	U	Measurement Data	
BM 4.7 MHz	V	Control	

Figure A-13. Data Transferral - AFTEC Form 144 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286
287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308
309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374
375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396
397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418
419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462
463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506
507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572
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595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638
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705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726
727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748
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793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814
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903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946
947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012
1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034
1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078
1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122
1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144
1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166
1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210
1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254
1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276
1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298
1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													

**SITE**      **MUL**

[illegible]

AFTEC FORM NO. 145		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site	A	Site	See Table A3 for Site Codes		
	B	ATE Type	Code Item 4 E MTS (BM) Item 5 N NSS Control	Meaning Item 4 E MTS (BM) Item 5 N NSS Control	
TX or RX	C	TX or RX	Code T R	Meaning TX RX	
Link Number	D	Link Number	Direct Transfer		
	H	Test Mode	Code A M	Meaning Indicates times on this card are automatic Indicates times on this card are manual	
BM or Manual Start Time	K	DTG Start	See Table A5 for Instructions		
BM or Manual Stop Time	N	DTG Stop	See Table A5 for Instructions		
BM or Manual BBL Meas	P	Measurement Data	Direct Transfer		
Manual PMP BBL	S	Measurement Data	Direct Transfer. Use this field only for cards with Manual Test Modes.		
	V	Control	Code Item 78 B Card ID Item 79 1 Form ID Item 80	Meaning Card ID Form ID Not Used	



[illegible]

AFTEC FORM NO. 146	CARD NO. B	TRANSFER INSTRUCTIONS									
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION									
Site	A	Site	See Table A3 for Site Codes								
	B	ATE Type	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 4 G</td> <td>MTS (NLG)</td> </tr> <tr> <td>Item 5 B</td> <td>BBSA</td> </tr> <tr> <td>Item 6 N</td> <td>NSS Control</td> </tr> </table> <p>Note: If test mode is manual do not use this field.</p>	Code	Meaning	Item 4 G	MTS (NLG)	Item 5 B	BBSA	Item 6 N	NSS Control
Code	Meaning										
Item 4 G	MTS (NLG)										
Item 5 B	BBSA										
Item 6 N	NSS Control										
	H	Test Mode	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>A</td> <td>Indicates times and measurements on the card are automatic</td> </tr> <tr> <td>M</td> <td>Indicates times and measurements on the card are manual</td> </tr> </table>	Code	Meaning	A	Indicates times and measurements on the card are automatic	M	Indicates times and measurements on the card are manual		
Code	Meaning										
A	Indicates times and measurements on the card are automatic										
M	Indicates times and measurements on the card are manual										
Manual (or BBSA) DTG Start	K	DTG Start	See Table A3 for Instructions								
Manual (or BBSA) DTG Finish	N	DTG Stop	See Table A5 for Instructions								
BBSA or Manual SLOT#1 or MAN PMP AVG ICN	P	Measurement Data	<p>Direct Transfer</p> <p>Note: For the Manual PMP AVG ICN and RSL measurements a separate card will have to be made out with manual test mode and Item 80 = 2. Enter AVG ICN into field P and RSL into field S. Fields A through K should be identical on both cards.</p>								
BBSA or Manual SLOT#2 or MAN PMP RSL	S	Measurement Data	<p>Direct Transfer</p> <table border="0"> <tr> <td>D</td> <td>X</td> </tr> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 78 B</td> <td>Card ID</td> </tr> <tr> <td>Item 79 J</td> <td>Form ID</td> </tr> </table>	D	X	Code	Meaning	Item 78 B	Card ID	Item 79 J	Form ID
D	X										
Code	Meaning										
Item 78 B	Card ID										
Item 79 J	Form ID										
	V	Control	<table border="0"> <tr> <td>Item 80 1</td> <td>Specifies fields P and S as slot noise measurements</td> </tr> <tr> <td>2</td> <td>Specifies fields P and S as Manual ICN and RSL measurements respectively</td> </tr> </table>	Item 80 1	Specifies fields P and S as slot noise measurements	2	Specifies fields P and S as Manual ICN and RSL measurements respectively				
Item 80 1	Specifies fields P and S as slot noise measurements										
2	Specifies fields P and S as Manual ICN and RSL measurements respectively										

Figure A-15. Data Transferral - AFTEC Form 146 Sheet 2 of 3



[illegible]

Figure A-16. Data Transferral - AFTEC Form 150

AFTEC FORM NO. 150		CARD NO. E	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Message From/To	A	Site (TX)	Use Site Where Message Originated From. See Table A3 for Site Codes.
Message From/To	C	Site (RX)	Use Site Where Message Transmitted To. See Table A3 for Site Codes.
Test Number	H	Test Number	Direct Transfer
Time Initiated	L	DTG Message Initiated	See Table A5 for Instructions
Time Response Received	O	DTG of Response	See Table A5 for Instructions
Lapsed	P	Total Time	See Table A5 for Instructions
Number of Repeated Requests	Q	Number of Repeated Requests	Direct Transfer
Objective Number	U	Objective Number	Direct Transfer (24122)
	Z	Control	<div>Code</div> <div>Meaning</div> <div>Item 78 E Card ID</div> <div>Item 79 A Form ID</div> <div>Item 80 Not Used</div>

Figure A-16. Data Transferral - AFTEC Form 150 Sheet 2 of 3



STATION LKF		ATEC OPERATOR NAME: AK		MANUAL OPERATOR NAME		TEST TEAM OBSERVER	
DATE	*REAL OR PROBLEM	TIME	MANUAL	ATEC	CCSD	Estimate of Scope of Problem Manual Channel ATEC	ACTUAL SCOPE OF PROBLEM
Nov 13	Problem		5318 1000		9AWN	Channel	Group
						DTG-53181030	
WAS ALT ACTION TAKEN?		WHO MADE FIRST ALT DECISION?		WAS FIRST ALT GOOD?		WAS SECOND ALT GOOD?	
No						DTG Restoral: 53181059	
DTG							
Comments: Provide a narrative of the problem and actions taken. Include any observation or information that you feel is pertinent to the analysis of this exercise.							

\*Indicate whether this is a real or injected problem.

Note: The Instructions Pertaining to Form 151 are to be used with an updated version to be provided at a later date.

AFTEC FORM NO. 151	CARD NO. H		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION		
Site Station	A	Site	See Table A3 for Site Codes	
CCSD	B	CCSD Number	Use last four digit	
Real or Injected	D	Problem Type	Code Meaning I Injected N Non-Injected	
Accomplished manually or with ATEC?	E	Test Mode	Code Meaning A Indicates times on this card are automatic M Indicates times on this card are manual	
DTG Problem First Noticed	F	DTG of Problem	See Table A5 for Instructions	
DTG Extent of Problem	G	DTG Determination of Scope of Problem	See Table A5 for Instructions	
Estimate of Scope of Problem	H	Scope of Problem	Code Meaning L Link S Supergroup T Trunk G Group C Circuit H Channel O Other	
Actual Scope of Problem	I	Actual Scope of Problem	See Codes in Field H above	
DTG When ALT Route Selected	J	DTG ALT	See Table A5 for codes	
Was ALT Action Taken?	K	ALT?	Use "Y" for yes and "N" for no	
DTG Service Restored	L	DTG Restoral	See Table A5 for Codes	
Who Made first ALT Decision?	N	Who Made ALT Decision?	Code Meaning T Tech controller (TCF) N Network controller M Maintenance A ATE Operator O Other	
Was First ALT Good	O	ALT Good?	Use "Y" for yes and "N" for no	
Was Second ALT Good	P	Second ALT Good?	Use "Y" for yes and "N" for no	
ATEC Equipment	Q	ATE Type	See Table A4 for Abbreviations	
	T	Control	Code Meaning Item 78 H Card ID Item 79 C Form ID Item 80 Not Used	





FORM NO. 157	CARD NO. B		TRANSFER INSTRUCTIONS												
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION													
Task Number	A	Site	Use LKF												
Add Site ATE	B	ATE Type	Use N to Indicate NSS Test												
	E	Task Number	Direct Transfer												
	I	ATE Type Added to NSS Load	See Table A4 for Codes												
	J	Site of added ATE Type	See Table A3 for Site Codes												
Start Time	K	DTG Start	Note: If no ATE is scanning, leave I and J blank												
Stop Time	N	DTG Stop	See Table A5 for Instructions												
	V	Control	See Table A5 for Instructions												
			<table border="0"> <tr> <td></td> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 78</td> <td>B</td> <td>Card ID</td> </tr> <tr> <td>Item 79</td> <td>K</td> <td>Form ID</td> </tr> <tr> <td>Item 80</td> <td></td> <td>Not Used</td> </tr> </table>		Code	Meaning	Item 78	B	Card ID	Item 79	K	Form ID	Item 80		Not Used
	Code	Meaning													
Item 78	B	Card ID													
Item 79	K	Form ID													
Item 80		Not Used													



DATE TYPE IQCS

[illegible]

NOTE (1): Evaluate if the ATEC recognized traffic type met the requirements of the traffic recognition material.

AFTEC FORM NO. 158		CARD NO. C		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site		A	Site	See Table A3 for Site Codes	
ATE Type		B	ATE Type	See Table A4 for Codes	
CCSD		C	CCSD Number	Use last four digits	
Scanner Address		D	Scanner Address	Direct Transfer	
Assigned Traffic Type		H	Assigned Traffic Type	Code Meaning	
				VU	Von User
				VO	Voice
				SF	Spare
				VJ	Von IST
				VX	Vox (Silk Purse, Vox O/W, Vox Net)
				DT	Data
				SE	SEVOCOM
				DI	Din IST
				VT	VFCT
				DI	Din User
				FX	Facsimile
				DC	DC
				OT	Other
				See codes in field H above.	
Manually Recognized Traffic Type		I	Manually Recognized Traffic Type	Direct Transfer	
ATEC Recognized Traffic Type		J	ATEC Recognized Traffic Type		
DTG When Monitored		K	DTG When Monitored	See Table A5 for Instructions	
Was ATEC Correct?		L	ATEC Correct?	Use "Y" for yes and "N" for no	
VU Value		O	Measurement Data	Direct Transfer (VU Measurement)	
PA Value		P	Measurement Data	Direct Transfer (PA Measurement)	
SW Value		Q	Measurement Data	Direct Transfer (SW Measurement)	
FR Value		R	Measurement Data	Direct Transfer (FR Measurement)	
M5 Value		S	Measurement Data	Direct Transfer (M5 Measurement)	
		U	Control		
				Code	Meaning
				Item 78	Card ID
				Item 79	Form ID
				Item 80	Not Used

Figure A-19. Data Transferral - AFTEC Form 158 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
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151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
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211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
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421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
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511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810
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901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020

Figure A-19. Data Transferral - AFTEC Form 158 Sheet 3 of 3

[illegible]

Figure A-20. Data Transferral - AFTEC Form 160

Sheet 1 of 3

AFTEC FORM NO. 160		CARD NO. A	TRANSFER INSTRUCTIONS																			
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION																			
CCSD FR Parameter Value FR Alarm Status	A	Site	Four cards will have to be filled out for each test; one for data pertaining to LKF, one for DON, one for FEL, and another for NSS. For the NSS data the site is LKF.																			
	B	ATE Type	Item 4 (If LKF use Q, if DON use Q, if FEL use I and if NSS use N)																			
	C	CCSD	Use Last Four Digits																			
	G	Measurement Data	Direct Transfer																			
	H	FR Alarm Status	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>A</td> <td>Amber</td> </tr> <tr> <td>AH</td> <td>Amber High</td> </tr> <tr> <td>AL</td> <td>Amber Low</td> </tr> <tr> <td>AT</td> <td>Amber Trending</td> </tr> <tr> <td>R</td> <td>Red</td> </tr> <tr> <td>RH</td> <td>Red High</td> </tr> <tr> <td>RL</td> <td>Red Low</td> </tr> <tr> <td>RT</td> <td>Red Trending</td> </tr> <tr> <td>G</td> <td>Green</td> </tr> </table>	Code	Meaning	A	Amber	AH	Amber High	AL	Amber Low	AT	Amber Trending	R	Red	RH	Red High	RL	Red Low	RT	Red Trending	G
Code	Meaning																					
A	Amber																					
AH	Amber High																					
AL	Amber Low																					
AT	Amber Trending																					
R	Red																					
RH	Red High																					
RL	Red Low																					
RT	Red Trending																					
G	Green																					
AV Parameter Value AV Alarm Status	J	Measurement Data	Direct Transfer (AV Value)																			
	K	AV Alarm Status	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>A</td> <td>Amber</td> </tr> <tr> <td>AH</td> <td>Amber High</td> </tr> <tr> <td>AL</td> <td>Amber Low</td> </tr> <tr> <td>AT</td> <td>Amber Trending</td> </tr> <tr> <td>R</td> <td>Red</td> </tr> <tr> <td>RH</td> <td>Red High</td> </tr> <tr> <td>RL</td> <td>Red Low</td> </tr> <tr> <td>RT</td> <td>Red Trending</td> </tr> <tr> <td>G</td> <td>Green</td> </tr> </table>	Code	Meaning	A	Amber	AH	Amber High	AL	Amber Low	AT	Amber Trending	R	Red	RH	Red High	RL	Red Low	RT	Red Trending	G
Code	Meaning																					
A	Amber																					
AH	Amber High																					
AL	Amber Low																					
AT	Amber Trending																					
R	Red																					
RH	Red High																					
RL	Red Low																					
RT	Red Trending																					
G	Green																					
DTG of Change Was Trend Indicated? Was Trend Detected? How Was Trend Detected?	N	DTG of Change	See Table A5 for Instructions																			
	O	Trend Indicated?	Use "y" for yes and "N" for no																			
	P	Trend Detected?	Use "y" for yes and "N" for no																			
	Q	How Detected?	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>1</td> <td>ATE Trend Report</td> </tr> <tr> <td>2</td> <td>ATE Parameter Alarm Output</td> </tr> <tr> <td>3</td> <td>Manual Methods</td> </tr> </table>	Code	Meaning	1	ATE Trend Report	2	ATE Parameter Alarm Output	3	Manual Methods											
Code	Meaning																					
1	ATE Trend Report																					
2	ATE Parameter Alarm Output																					
3	Manual Methods																					
DTG When Trend Detected	S	DTG Of Detection	See Table A5 for Instructions																			
	Y	Control	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 78</td> <td>A</td> </tr> <tr> <td>Item 79</td> <td>C</td> </tr> <tr> <td>Item 80</td> <td>Not Used</td> </tr> </table>	Code	Meaning	Item 78	A	Item 79	C	Item 80	Not Used											
Code	Meaning																					
Item 78	A																					
Item 79	C																					
Item 80	Not Used																					

Figure A-20. Data Transferral - AFTEC Form 160 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	OP	Q	R	S	T	U	V	W	X	Y
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192
193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312
313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336
337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384
385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408
409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456
457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504
505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552
553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576
577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624
625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648
649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672
673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696
697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744
745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768
769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816
817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864
865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888
889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912
913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936
937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984
985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008
1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032
1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080
1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104
1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128
1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152
1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176
1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200
1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224
1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248
1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272
1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296
1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344
1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368
1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392
1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416
1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440
1441																							

# ATEC TRENDING EVALUATION QUESTIONNAIRE

RANK/NAME P.R. E-5

SKILL(AFCS, MOS, SPECIALTY): \_\_\_\_\_

Circle the response that best describes your opinion for each statement below. At the end of the questionnaire include any comments that would further amplify your opinion of the usefulness of the ATEC system in accomplishing trending. Several of the questions collectively address the NSS, IQCS and DDMS; circle the response under the applicable ATEC equipment.

1. I understand the trending capabilities of the:

- | NSS  | IQCS   | DDMS                                      |
|--|--|---|
| a. Strongly agree                            | a. Strongly agree                            | a. Strongly agree                         |
| b. Agree                                     | b. Agree                                     | <input checked="" type="radio"/> b. Agree |
| <input checked="" type="radio"/> c. Disagree | <input checked="" type="radio"/> c. Disagree | c. Disagree                               |
| d. Strongly disagree                         | d. Strongly disagree                         | d. Strongly disagree                      |
| e. No opinion                                | e. No opinion                                | e. No opinion                             |

2. I have had adequate training in the use of trending for:

- | NSS                                       | IQCS  | DDMS                                      |
|---|---|---|
| a. Strongly agree                         | a. Strongly agree                                     | a. Strongly agree                         |
| <input checked="" type="radio"/> b. Agree | b. Agree  | <input checked="" type="radio"/> b. Agree |
| c. Disagree                               | c. Disagree   | c. Disagree                               |
| d. Strongly disagree                      | <input checked="" type="radio"/> d. Strongly disagree | d. Strongly disagree                      |
| e. No opinion                             | e. No opinion   | e. No opinion                             |

3. The ATEC trending is an aid in detecting degrading conditions on a circuit:

- | NSS  | IQCS   | DDMS   |
|--|--|--|
| a. Strongly agree                              | a. Strongly agree                              | <input checked="" type="radio"/> a. Strongly agree |
| b. Agree                                       | b. Agree                                       | b. Agree   |
| c. Disagree                                    | c. Disagree                                    | c. Disagree  |
| d. Strongly disagree                           | d. Strongly disagree                           | d. Strongly disagree                               |
| <input checked="" type="radio"/> e. No opinion | <input checked="" type="radio"/> e. No opinion | e. No opinion                                      |

4. The ATEC trending is an aid in detecting degrading conditions on a system:

- | NSS  | IQCS                                      | DDMS  |
|--|---|---|
| <input checked="" type="radio"/> a. Strongly agree | a. Strongly agree                         | a. Strongly agree                                     |
| b. Agree   | <input checked="" type="radio"/> b. Agree | b. Agree  |
| c. Disagree  | c. Disagree                               | c. Disagree   |
| d. Strongly disagree                               | d. Strongly disagree                      | <input checked="" type="radio"/> d. Strongly disagree |
| e. No opinion                                      | e. No opinion                             | e. No opinion   |

5. The ATEC outputs provide adequate indication of a degrading condition.

NSS	IQCS	DDMS
a. Strongly agree	<input checked="" type="radio"/> a. Strongly agree	a. Strongly agree
b. Agree	b. Agree	b. Agree
c. Disagree	c. Disagree	c. Disagree
<input checked="" type="radio"/> d. Strongly disagree	d. Strongly disagree	<input checked="" type="radio"/> d. Strongly disagree
e. No opinion	e. No opinion	e. No opinion

6. The NSS Trend Summary display was easy to use.

NSS	IQCS	DDMS
a. Strongly agree	a. Strongly agree	a. Strongly agree
b. Agree	b. Agree	b. Agree
<input checked="" type="radio"/> c. Disagree	<input checked="" type="radio"/> c. Disagree	<input checked="" type="radio"/> c. Disagree
d. Strongly disagree	d. Strongly disagree	d. Strongly disagree
e. No opinion	e. No opinion	e. No opinion

8. The NSS time dependent test feature is a good method for accomplishing trending.

NSS	IQCS	DDMS
a. Strongly agree	a. Strongly agree	a. Strongly agree
<input checked="" type="radio"/> b. Agree	b. Agree	b. Agree
c. Disagree	c. Disagree	<input checked="" type="radio"/> c. Disagree
d. Strongly disagree	<input checked="" type="radio"/> d. Strongly disagree	d. Strongly disagree
e. No opinion	e. No opinion	e. No opinion

9. There should be some method of attracting the operators attention when the NSS is displaying trending information.

NSS	IQCS	DDMS
<input checked="" type="radio"/> a. Strongly agree	a. Strongly agree	a. Strongly agree
b. Agree	b. Agree	b. Agree
c. Disagree	c. Disagree	c. Disagree
d. Strongly disagree	d. Strongly disagree	d. Strongly disagree
e. No opinion	<input checked="" type="radio"/> e. No opinion	<input checked="" type="radio"/> e. No opinion

10. A hard copy of NSS trending information should be automatically made at a specific time.

NSS	IQCS	DDMS
a. Strongly agree	a. Strongly agree	<input checked="" type="radio"/> a. Strongly agree
b. Agree	b. Agree	b. Agree
c. Disagree	c. Disagree	c. Disagree
<input checked="" type="radio"/> d. Strongly disagree	d. Strongly disagree	d. Strongly disagree
e. No opinion	<input checked="" type="radio"/> e. No opinion	e. No opinion

Figure A-21. Data Transferral - AFTEC Form 161 Sheet 2 of 6

11. Trending can be accomplished better using manual methods rather than the NSS.

- |  |                      |
|--|----------------------|
| <input checked="" type="radio"/> a. Strongly agree | d. Strongly disagree |
| b. Agree   | e. No opinion        |
| c. Disagree  |                      |

12. The IQCS outputs immediately drew my attention to degrading conditions on a circuit.

- |                   |   |
|-------------------|---|
| a. Strongly agree | <input checked="" type="radio"/> d. Strongly disagree |
| b. Agree          | e. No opinion   |
| c. Disagree       |   |

13. The DDMS printouts immediately drew my attention to degrading circuit conditions.

- |                   |  |
|-------------------|--|
| a. Strongly agree | d. Strongly disagree                           |
| b. Agree          | <input checked="" type="radio"/> e. No opinion |
| c. Disagree       |  |

14. It was easy to use the IQCS trending information.

- |   |                      |
|---|----------------------|
| a. Strongly agree                         | d. Strongly disagree |
| <input checked="" type="radio"/> b. Agree | e. No opinion        |
| c. Disagree                               |                      |

15. It was easy to use the DDMS trending information.

- |   |                      |
|---|----------------------|
| a. Strongly agree                         | d. Strongly disagree |
| <input checked="" type="radio"/> b. Agree | e. No opinion        |
| c. Disagree                               |                      |

16. I did not need to use internal sources to understand the significance of trending information output by the:

- | NSS  | IQCS   | DDMS  |
|--|--|---|
| <input checked="" type="radio"/> a. Strongly agree | <input checked="" type="radio"/> a. Strongly agree | a. Strongly agree                                     |
| b. Agree   | b. Agree   | b. Agree  |
| c. Disagree  | c. Disagree  | c. Disagree   |
| d. Strongly disagree                               | d. Strongly disagree                               | <input checked="" type="radio"/> d. Strongly disagree |
| e. No opinion                                      | e. No opinion                                      | e. No opinion   |

17. I knew what to do when a degrading trend was indicated by:

- | NSS                                       | IQCS                 | DDMS   |
|---|----------------------|--|
| a. Strongly agree                         | a. Strongly agree    | a. Strongly agree                              |
| <input checked="" type="radio"/> b. Agree | b. Agree             | b. Agree                                       |
| c. Disagree                               | c. Disagree          | c. Disagree                                    |
| d. Strongly disagree                      | d. Strongly disagree | d. Strongly disagree                           |
| e. No opinion                             | e. No opinion        | <input checked="" type="radio"/> e. No opinion |

18. The trending information presented by ATEC is helpful in preventing outages.

- | NSS                                       | IQCS   | DDMS  |
|---|--|---|
| a. Strongly agree                         | a. Strongly agree                            | a. Strongly agree                                     |
| <input checked="" type="radio"/> b. Agree | b. Agree                                     | b. Agree  |
| c. Disagree                               | <input checked="" type="radio"/> c. Disagree | c. Disagree   |
| d. Strongly disagree                      | d. Strongly disagree                         | <input checked="" type="radio"/> d. Strongly disagree |
| e. No opinion                             | e. No opinion                                | e. No opinion   |

19. The trending information presented by ATEC is helpful in predicting failures.

- | NSS                                       | IQCS  | DDMS                                      |
|---|---|---|
| a. Strongly agree                         | a. Strongly agree                                     | a. Strongly agree                         |
| <input checked="" type="radio"/> b. Agree | b. Agree  | <input checked="" type="radio"/> b. Agree |
| c. Disagree                               | c. Disagree   | c. Disagree                               |
| d. Strongly disagree                      | <input checked="" type="radio"/> d. Strongly disagree | d. Strongly disagree                      |
| e. No opinion                             | e. No opinion   | e. No opinion                             |

20. A better display would improve the utility of ATEC trending information.

- | NSS  | IQCS                                      | DDMS   |
|--|---|--|
| a. Strongly agree                              | a. Strongly agree                         | a. Strongly agree                            |
| b. Agree                                       | <input checked="" type="radio"/> b. Agree | b. Agree                                     |
| c. Disagree                                    | c. Disagree                               | <input checked="" type="radio"/> c. Disagree |
| d. Strongly disagree                           | d. Strongly disagree                      | d. Strongly disagree                         |
| <input checked="" type="radio"/> e. No opinion | e. No opinion                             | e. No opinion                                |

AFTEC FORM NO. 161-1		CARD NO. D		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION			
Site	A	Site	See Table A3 for Site Codes		
ATEC Equipment	B	ATE Type	See Table A4 for Codes		
Operator	C	Name	Use initials		
Rank	D	Rank	Direct Transfer		
Skill Level	E	Skill Level	Direct Transfer		
MOS/AFCS/NEC/SPECIALTY	F	MOS/AFCS/Specialty	Direct Transfer		
Date	G	Date	Item 18	Year	Radio day (see Table A5 for Instructions)
Objective	H	Objective Number	Item 19-21	Direct Transfer	
	I	Answers	All questionnaire answers should be entered in this field. There are 50 items which is larger than the total number of questions on any one questionnaire. Form 161, however, should be filled out on three cards; one for IQCS responses, one for NSS and another for DDMS.		
	J	Control	Item 78	Code	Meaning
			Item 79	Code	Card ID
				A	Form ID
				B	If Form 94
				C	If Form 97
				D	If Form 103
				E	If Form 132
				F	If Form 133
				G	If Form 135
				H	If Form 137
				I	If Form 147
				J	If Form 148
				K	If Form 161
			Item 80		If Form 164
					Not used



**DATE:** Jan 2, 1976

\*NOTES ARE ON REVERSE OF FORM

AFTEC FORM NO. 162		CARD NO. E		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site MILDEP or DCA Report		A	Site	See Table A3 for Site Codes	
		D	MILDEP or DCA Report	Code M D	Meaning MILDEP Report DCA Report
Category of Report		E	Category of Report	Code S C E H L T O	Meaning System Outage Circuit Outage Equipment Status Hazardous Condition Link Outage Trunk Outage Other
		F	Type of Report	Code N P J	Meaning Near Real Time or Immediate Periodic JCN
Type of Report		G	Format of Report	Code K C W A Q	Meaning "K" Line "C" Line "W" Line "A" Line "Q" Line
		I	Time Submission Required	Convert measurement to minutes, i.e. 1 hour = 60 minutes.	
Time Submitted Time ATE Alarmed How Transmitted		L	DTG Report Submitted	See Table A5 for Instructions	
		O	DTG ATE Alarmed	See Table A5 for Instructions	
		R	Method of Transmission	Code V T F N	Meaning Voice Orderwire Teletype Orderwire Formal Message Nucleus Message
		V	ATEC Detectable?	Use "Y" for yes and "N" for no	
Was it ATEC Detectable? Local ATE Alarm		W	Local ATE Alarm	Direct Transfer	
		Z	Control	Code Item 78 Item 79 Item 80	Meaning Card ID Form ID Not Used

Figure A-22. Data Transferral - AFTEC Form 162 Sheet 2 of 3



## DCAC 310-55-1, MILDEP REPORTS &amp; OTHER REPORTS

[illegible]

AFTEC FORM NO. 162A		CARD NO. E	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	See Table A3 for Site Codes
MILDEP or DCA Report	D	MILDEP or DCA Report	Code Meaning M MILDEP Report D DCA Report
Category of Report	E	Category of Report	Code Meaning S System Outage C Circuit Outage E Equipment Status H Hazardous Condition L Link Outage T Trunk Outage O Other
Type of Report	F	Type of Report	Code Meaning N Near Real Time or Immediate P Periodic J JCN
Report Preparation Start Time	G	Format of Report	Code Meaning K "K" Line C "C" Line W "W" Line A "A" Line Q "Q" Line
Time Report Submitted	J	DTG Report Prep. Start Time	See Table A5 for Instructions
How Transmitted	L	DTG Report Submitted	Direct Transfer
	R	Method of Transmission	Code Meaning V Voice Orderwire T Teletype Orderwire F Formal Message N Nucleus Message
	Z	Control	Code Meaning Item 78 E Card ID Item 79 B Form ID Item 80 Not Used

Figure A-23. Data Transferral - AFTEC Form 162A Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480

DATE: Aug 4, 1975

[illegible]

AFTEC FORM NO. 163		CARD NO. E		TRANSFER INSTRUCTIONS	
PORT ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site MILDEP or DCA Report		A	Site	See Table A3 for Site Codes	
		D	MILDEP or DCA Report	Code    Meaning M    MILDEP Report D    DCA Report	
Category of Report		E	Category of Report	Code    Meaning S    System Outage C    Circuit Outage E    Equipment Status H    Hazardous Condition L    Link Outage T    Trunk Outage O    Other	
		F	Type of Report	Code    Meaning N    Near Real Time or Immediate P    Periodic J    JCN	
Type of Report		G	Format of Report	Code    Meaning K    "K" Line C    "C" Line W    "W" Line A    "A" Line Q    "Q" Line	
		J	DTG Information Received	See Table A5 for Instructions	
Time Info Received Reason for Report		K	Reason for Report	Code    Meaning A    Activity Message M    Message Mode O    Other	
		L	DTG Report Submitted	See Table A5 for Instructions	
DTG NSS Submitted Report Adequacy of AM Information Further Coord Required with AM		M	Information Adequate?	Use "Y" for yes and "N" for no	
		N	Further Coordination Required?	Use "Y" for yes and "N" for no	
Were Time Requirements Met?		S	In Time?	Use "Y" for yes and "N" for no	
		T	ATE Report	Use "Y" for yes and "N" for no	
ATE Site Report		Z	Control	Code    Meaning Item 78    E    Card ID Item 79    D    Form ID Item 80    Not Used	

Figure A-24. Data Transferral - AFTEC Form 163 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z																																																																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000

Figure A-24. Data Transferral - AFTEC Form 163 Sheet 3 of 3

# MANHOURS EVALUATION (OPERATIONS)\*

\*\* FUNCTION: I/OQCS PM

CONTROLLER(S) ACCOMPLISHING TASK AK

TECH CONTROL TASK Coordination

SKILL LEVEL(S) 5

OBSERVER \_\_\_\_\_

SITE FEL

START PERIOD NOV 13, 1975

ATEC EQUIPMENT IQCS

STOP PERIOD NOV 14, 1975

NO.	TASK START TIME	TASK COMP TIME	ELAPSED TIME (COL 3-COL 2 WITH ADJ FOR TIME -OUTS	NO. OF PERSONS	(CHECK ONE)			REMARKS
					ATEC	MANUAL	COMBINATION	
1	1030	1059	0029	3	X			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

\* If data collected on other AFTEC Forms will completely fill out this form, there is no requirement to complete this form at the time of testing.

\*\* The functional relationships to technical control operations are listed on the verse side.

AFTEC FORM NO. 165		CARD NO. B															
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS														
Site	A	Site	See Table A3 for Site Codes														
ATEC Equipment	B	ATE Type	See Table A4 for Codes														
Function	D	Function	Enter the objective number as listed next to the functions on the reverse side of Form 165. (left justified)														
Tech Control Task	F	Tech Control Task	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>1</td> <td>Coordination</td> </tr> <tr> <td>2</td> <td>Patching (restoral or rerouting)</td> </tr> <tr> <td>3</td> <td>Testing (measurement made due to extraordinary condition)</td> </tr> <tr> <td>4</td> <td>Monitoring</td> </tr> <tr> <td>5</td> <td>Reporting</td> </tr> <tr> <td>6</td> <td>Other</td> </tr> </table>	Code	Meaning	1	Coordination	2	Patching (restoral or rerouting)	3	Testing (measurement made due to extraordinary condition)	4	Monitoring	5	Reporting	6	Other
Code	Meaning																
1	Coordination																
2	Patching (restoral or rerouting)																
3	Testing (measurement made due to extraordinary condition)																
4	Monitoring																
5	Reporting																
6	Other																
Skill Levels	G	Skill Levels	Enter Skill Levels Here. Have room for four.														
ATEC, Manual, Combination	H	Test Mode	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>A</td> <td>Indicates times on this card are automatic</td> </tr> <tr> <td>M</td> <td>Indicates times on this card are manual</td> </tr> <tr> <td>S</td> <td>Indicates times on this card are a combination</td> </tr> </table>	Code	Meaning	A	Indicates times on this card are automatic	M	Indicates times on this card are manual	S	Indicates times on this card are a combination						
Code	Meaning																
A	Indicates times on this card are automatic																
M	Indicates times on this card are manual																
S	Indicates times on this card are a combination																
Number of Persons	J	Number of Persons	Direct Transfer														
Task Start Time	K	DTG Start	See Table A5 for Instructions														
Task Stop Time	N	DTG Stop	See Table A5 for Instructions														
Elapse Time	O	Total Time	Convert total time into minutes														
	V	Control	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 78</td> <td>B</td> </tr> <tr> <td>Item 79</td> <td>Z</td> </tr> <tr> <td>Item 80</td> <td></td> </tr> <tr> <td></td> <td>Card ID</td> </tr> <tr> <td></td> <td>Form ID</td> </tr> <tr> <td></td> <td>Not Used</td> </tr> </table>	Code	Meaning	Item 78	B	Item 79	Z	Item 80			Card ID		Form ID		Not Used
Code	Meaning																
Item 78	B																
Item 79	Z																
Item 80																	
	Card ID																
	Form ID																
	Not Used																

Figure A-25. Data Transferral - AFTEC Form 165 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
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1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
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1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													

# FAULT DETECTION/ISOLATION

MANUAL MODE

ATEC EQUIP IQCS

Site MUL

Tech Controller \_\_\_\_\_

Distant Terminal SCH

1. DTG Fault Detected: 53180600

2. Method of Detection (Check one below):

Customer Complaint: X

Equipment Alarm \_\_\_\_\_

Quality Control Test \_\_\_\_\_

Trending \_\_\_\_\_

3. DTG Start Coordination: 53180610

4. DTG Fault Isolated: 53180620

5. Type of Fault (Check below):

Outage: \_\_\_\_\_

Noise/Fading: X

Improper Level: \_\_\_\_\_

6. Level of Fault (Check below):

\*Customer Equip \_\_\_\_\_

Channel:  
VF X

DC/Data \_\_\_\_\_

Multiplex \_\_\_\_\_

Wideband \_\_\_\_\_

7. Priority \_\_\_\_\_ (of highest priority circuit affected)

8. Restoration Start Time if Applicable: 53180625 (DTG)

Controller Action \_\_\_\_\_ ( )

Maintenance Action (TCF) \_\_\_\_\_ (X) Work Order # \_\_\_\_\_

Maintenance Action (Wideband) \_\_\_\_\_ ( )

9. Altroute Start Time if Applicable: 53180630 DTG

User Preemption necessary: Yes X No \_\_\_\_\_

10. Time Fault Cleared: 53180635

11. Remarks:

13. For Test Team: Fault Injected: Yes \_\_\_\_\_ No X

AFTEC FORM NO. 166		CARD NO. H		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION			
Site	A	Site		See Table A3 for Site Codes	
Distant Terminal	B	Site		See Table A3 for Site Codes	
DTG Fault Detected	C	DTG Fault Detected		See Table A5 for Instructions	
Method of Detection	D	Method of Detection		Code C Meaning E Customer Complaint Q Equipment Status T Quality Control Test Trending	
Manual or ATEC Mode	E	Test Mode		If manual enter X and if ATEC enter the proper ATEC code found in Table A4	
DTG Start Coordination	F	DTG Start Fault Isolation		See Table A5 for Instructions	
DTG Fault Isolated	G	DTG End Fault Isolation		See Table A5 for Instructions	
Type of Fault	H	Type of Fault		Code O Meaning N Outage L Noise/Fading Improper Level	
Level of Fault	I	Origin of Fault		Code E Meaning V Customer Equipment D VF Channel M DC/DATA W Multiplex Wideband	
Restoration Start Time	J	DTG Start Correction		See Table A5 for Instructions	
ALT Route Start Time	L	DTG Of Alt Begin		See Table A5 for Instructions	
Priority	M	Priority		Direct Transfer (left justified)	
User Preemption Necessary?	O	Preemption?		Use "Y" for yes and "N" for no	
Fault Injected	P	Injected or Non-Injected		Code I Meaning N Injected Non-Injected	
Controller, Maintenance (TCF, Wideband) Action	Q	Action Taken		Item 64 Enter a "1" if controller action was checked. Item 65 Enter a "1" if maintenance (TCF) action was checked. Item 66 Enter a "1" if maintenance (wideband) action was checked.	
Time Fault Cleared	R	DTG Fault Cleared		See Table A5 for Instructions	
Tech Controller	S	Rank, Skill Level		If given, enter the controller's rank and skill level. Item 75 & 76, for rank, and item 77 for skill level.	

Figure A-26. Data Transferral - AFTEC Form 166 Sheet 2 of 4

AFTEC FORM NO. 166		CARD NO.	H (Continued)															
DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS															
	T	Control	<p>Note: The work order number, if provided, will be entered on a second card. Fields A through E will be identical on this card and the work order number will be entered in Field F. Leave Fields G through S blank and fill in Field T as usual only with Item 80 = 2.</p> <table border="0"> <tr> <td>Item 78</td> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 79</td> <td>H</td> <td>Card ID</td> </tr> <tr> <td>Item 80</td> <td>B</td> <td>Form ID</td> </tr> <tr> <td></td> <td>1</td> <td>Specifies Field F as a DTG Start Fault Isolation</td> </tr> <tr> <td></td> <td>2</td> <td>Specifies Field F as a work order number</td> </tr> </table>	Item 78	Code	Meaning	Item 79	H	Card ID	Item 80	B	Form ID		1	Specifies Field F as a DTG Start Fault Isolation		2	Specifies Field F as a work order number
Item 78	Code	Meaning																
Item 79	H	Card ID																
Item 80	B	Form ID																
	1	Specifies Field F as a DTG Start Fault Isolation																
	2	Specifies Field F as a work order number																

A	B	C	DE	F	G	H I	J	K	L	M	NOP	Q	R	S	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
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785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
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1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024
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1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136
1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152
1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168
1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184
1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200
1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216
1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248
1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264
1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280
1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296
1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312
1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328
1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344
1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360
1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376
1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392
1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424
1425	1426														

## FAULT DETECTION/ISOLATION

SITE: CROUGHTON

### DETECTION

1. DTG Detected 53180655 . CCSD (Last Four) DULF96XD .
2. How Detected:
  - a. Complaint ☒\*
  - b. Equip Alarm ☐
  - c. QC Test ☐
  - d. Trending ☐
3. Adjacent TCF ☐
3. Traffic type DATA (VF, DC, DATA).

### FAULT ISOLATION

4. DTG Start Coordination 53180700 .
5. DTG Fault Isolated 53180730 .
6. Type of Fault:
  - a. Outage ☐
  - b. Noise/Fading ☒
  - c. Improper Level ☐
  - d. Other ☐
7. Where:
  - a. Customer Equip ☐
  - b. Channel ☐
  - c. Mux ☐
  - d. RF/Path ☒

### CORRECTION

8. DTG Correction Started 53180730 .
9. Alt Route Req'd: Yes ☒ No ☐ .  
If yes, begin time to establish Alt Route 53180755 .  
End time to establish Alt Route 53180756 .
10. For AF TCF's: Work order number (as applicable) \_\_\_\_\_ .  
For Army TCF's: Problem turned over to  
Maintenance: Yes ☐ No ☒ .
11. DTG Fault Cleared 53180806 .

### REPORTING

12. Time expended Completing Log, Forms, Reports 8 Minutes.

\*☐ Place in check (✓)

AFTEC FORM NO. 166A		CARD NO. H		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site	A	Site		See Table A3 for Site Codes	
CCSD	B	CCSD Number		Direct Transfer	
DTG Detected	C	DTG Detected		See Table A5 for Instructions	
How Detected	D	Method of Detection		Code	Meaning
				L	Adjacent TCF
				E	Customer Complaint
				Q	DCA Requested Outage
				S	Equipment Alarm
				T	Quality Control Test
				O	Scheduled Outage
					Trending
					Other
Traffic Type	E	Traffic Type		Code	Meaning
				H	HF
				V	VF
				D	DC
				T	Data
				O	Other
DTG Start Coordination	F	DTG Start Fault Isolation		See Table A5 for Instructions	
DTG Fault Isolated	G	DTG End Fault Isolation		See Table A5 for Instructions	
Type of Fault	H	Type of Fault		Code	Meaning
				O	Outage
				N	Noise/Fading
				L	Improper Level
				X	Other
Where	I	Origin of Fault		Code	Meaning
				B	Cable
				E	Customer Equipment
				C	Channel
				M	MUX
				P	RF/Path
				O	Other
DTG Correction Started	J	DTG Start Correction		See Table A5 for Instructions	
ALT Route Required?	K	ALT Necessary?		Use "Y" for yes and "N" for no	
Begin Time to Establish ALT	L	DTG ALT Begin		See Table A5 for Instructions	
End Time to Establish ALT	M	DTG ALT End		See Table A5 for Instructions	
Maintenance	P	Maintenance?		Use "Y" for yes and "N" for no	

Figure A-27. Data Transferral - AFTEC Form 166A Sheet 2 of 4

AFEC FORM NO. 166A		CARD NO. H (Continued)																
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS															
DTG Fault Cleared Time Expended Completing Log, Forms, Report	R	DTG Fault Cleared	See Table A5 for Instructions  Direct Transfer  Note: The work order number, if provided, will be entered on a second card. Fields A through E will be identical on this card and the work order number will be entered in Field F. Leave Fields G through S blank and fill in Field T as usual only with item 80-2.  <table><tr><td></td><td>Code</td><td>Meaning</td></tr><tr><td>Item 78</td><td>H</td><td>Card ID</td></tr><tr><td>Item 79</td><td>A</td><td>Form ID</td></tr><tr><td>Item 80</td><td>1</td><td>Specifies Field F as a DTG Start Fault Isolation</td></tr><tr><td></td><td>2</td><td>Specifies Field F as a work order number</td></tr></table>		Code	Meaning	Item 78	H	Card ID	Item 79	A	Form ID	Item 80	1	Specifies Field F as a DTG Start Fault Isolation		2	Specifies Field F as a work order number
		Code		Meaning														
	Item 78	H		Card ID														
Item 79	A	Form ID																
Item 80	1	Specifies Field F as a DTG Start Fault Isolation																
	2	Specifies Field F as a work order number																
	S	Report Time																
	T	Control																

Figure A-27. Data Transferral - AFTEC Form 166A Sheet 3 of 4

AD-A128 791

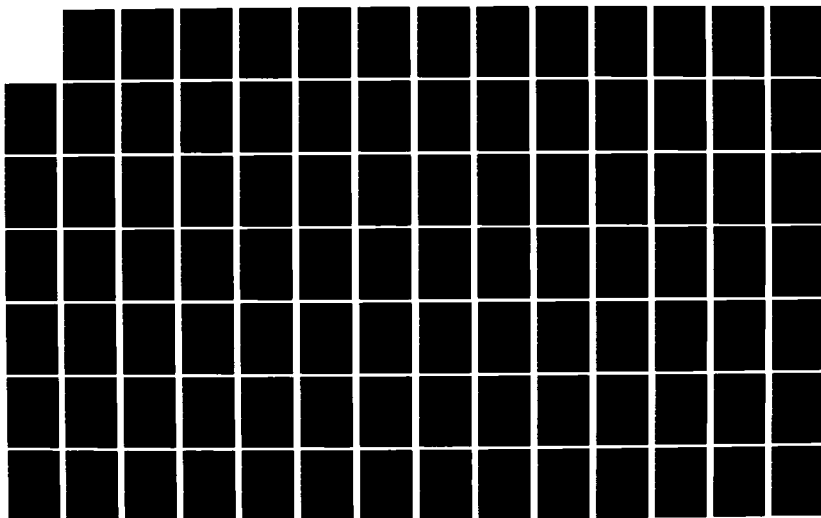
IMPLEMENTATION PLAN FOR DATA COLLECTION REDUCTION AND  
ANALYSIS IN SUPPORT. (U) COMPUTER SCIENCES CORP FALLS  
CHURCH VA MAY 76 F23613-74-C-0014

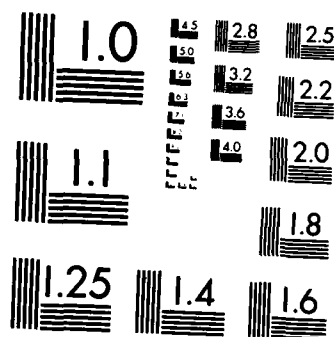
3/4

UNCLASSIFIED

F/G 9/2

NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A





AFTEC FORM NO. 166B		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site	A	Site	See Table A3 for Site Codes		
CCSD, Trunk or Facility	D	Trunk	Direct Transfer (If a trunk was tested, the number will have six items.)		
CCSD, Trunk or Facility	G	CCSD Number	Use last four digits (If a circuit was tested, the number should have four items.)		
Result of ATEC Indication	H	Test Mode	Code                      Meaning A                      Action taken was a result of ATEC Indication M                      Action taken was not a result of ATEC Indication		
Measurement, Coordination, Other	J	Actions Taken	Item 25 - Enter a "1" if measurement is checked Item 26 - Enter a "1" if coordination is checked Item 27 - Enter a "1" if other action is checked		
Start Time	K	DTG Start	See Table A5 for Instructions		
Stop Time	N	DTG Stop	See Table A5 for Instructions		
Total Time	O	Total Time	Direct Transfer		
Date	P	DTG of Test	Note: For those entries which only indicate a total time in minutes and no start/stop times, put the date in this field. See Table A5 for Instructions. (left justified)		
	V	Control	Code                      Meaning Item 78    B                      Card ID Item 79    L                      Form ID Item 80                      Not Used		

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	P	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286
287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308
309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374
375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396
397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418
419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462
463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506
507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572
573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638
639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682
683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704
705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726
727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748
749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814
815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836
837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858
859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902
903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946
947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012
1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034
1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078
1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122
1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144
1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166
1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210
1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254
1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276
1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298
1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													

DATE:

[illegible]

Notes are on the back of form.

AFTEC FORM NO. 168		CARD NO. B	
ENTRY DESCRIPTION	FIELD	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	<p>See Table A3 for Site Codes</p> <p>Direct Transfer (If test was made on a link, the number will be five characters long)</p> <p>Use last four digits (If test was made on a circuit, the number will be eight or four characters long)</p> <p>Code                      Meaning</p> <p>A                          Indicates times on this card are automatic</p> <p>M                          Indicates times on this card are manual</p> <p>N                          Indicates times on this card are NSS</p>
Link or CCSD	D	Link Number	
	G	CCSD Number	
	H	Test Mode	
Nature of Injected Problem	J	Problem Type	<p>Code                      Meaning</p> <p>Item 25, 26              AV                      Level Problem</p> <p>FR                          Frequency Problem</p> <p>Item 27                  I                          Injected</p> <p>N                          Non-Injected</p>
DTG of Detection	K	DTG Start Fault Isolation	See Table A5 for Instructions
	L	Notified?	Use "Y" for yes and "N" for no. (This information can be obtained by observing whether an "N" was put alongside the DTG of detection. If so, the answer is yes; otherwise, it is no.
Was Problem Correctly Identified?	M	Success?	Use "Y" for yes and "N" for no
DTG When Isolated	N	DTG Stop Fault Isolation	See Table A5 for Instructions
DTG of Injected Problem	P	DTG of Problem	See Table A5 for Instructions
Was There an ATEC Alarm	Q	Alarm?	Use "Y" for yes and "N" for no. Use this field only if test mode is A or N.
	S	DTG of Alarm	See Table A5 for Instructions. Use this field only if test mode is A or N.
	V	Control	<p>Code                      Meaning</p> <p>Item 78                  B                          Card ID</p> <p>Item 79                  N                          Form ID</p> <p>Item 80                  Not Used</p>



# S3 CIRCUIT FAULT ISOLATION TEST

TEST TYPE (TABLE 2-3)	BER PRIOR TO PROBLEM INJECTION	BER AFTER PROBLEM INJECTED	DATE-TIME GROUP WHEN:					METHOD OF FAULT ISO LATION**	
			PROBLEM INJECTED	NOTIFIED OF PROBLEM	PROBLEM TYPE IDENTIFIED*	PROBLEM IDENTIFIED	PROBLEM RESOLVED		CNT WAS RE- CERTIFIED
9	$0.5 \times 10^{-5}$	$0.1 \times 10^{-4}$	53180510	53180520	53180530	53180540	53180550	53180600	FEL/IQCS

Enter Remarks on Back of Form.

When multiple problems have been injected, use a separate line for each specific fault.  
Enter Manual, Site/ATU, or NSS.

AFTEC FORM NO. 172	CARD NO. B	TRANSFER INSTRUCTIONS
ITEM DESCRIPTION	FIELD	DESCRIPTION
Method of Fault Isolation	A	Site
	B	ATE TYPE
Test CCSD	G	Test CCSD
	H	Test Mode
Test Type	J	Test Type
DTG Problem Injected	K	DTG of Injection
DTG Notified of Problem or DTG Circuit Recertified	N	DTG Notification or DTG Recertification
DTG Problem Type Identified or BE before Injection	P	DTG Type Identification or BE before Injection
DTG Problem Identified or BE after Injection	S	DTG Final Identification or BE After Injection
DTG Problem Resolved	U	DTG Problem Resolved
	V	Control

See Table A3 for Site Codes (Use LKF if test mode is NSS)  
See Table A4 for Codes.  
Note: If test mode is manual do not use this field

Direct Transfer

Code	Meaning
A	Indicates the times and measurements on this card are automatic
M	Indicates the times and measurements on this card are manual
N	Indicates the times and measurements on this card are NSS

Direct Transfer

See Table A5 for Instructions

Note: Two cards will have to be filled out for this form. They will be identical from fields A to K. The second card will use fields N, P and S differently. Card 1 will have Item 80 set to 1 and for card 2 Item 80 = 2.

See Table A5 for Instructions

See Table A5 for Instructions. For second card directly transfer the BE measurement.

See Table A5 for Instructions. For second card directly transfer the BE measurement.

See Table A5 for Instructions. For second card leave this field blank.

Code	Meaning
Item 78	B
Item 79	O
Item 80	1
	2

Specifies fields N, P and S as DTG notification, type identification and final identification respectively  
Specifies fields N, P and S as DTG recertification, BE before and BE after injection respectively

Figure A-30. Data Transferral - AFTEC Form 172 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
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1431	1432	1433	1434	1435	1436	1437	1438	1439													

# SITE FEL

Notes are on back of form.

AFTEC FORM NO. 173	CARD NO. B	DESCRIPTION	TRANSFER INSTRUCTIONS
Site	A	Site	See Table A3 for Site Codes
AFTEC Equipment Used	B	ATE Type	See Table A4 for Abbreviations Note: If test mode is manual, do not use this field.
FI Method Used	H	Test Mode	Code Meaning A Indicates times and measurements on this card are automatic M Indicates times and measurements on this card are manual N Indicates times and measurements on this card are NSS
DTG Level Problem Assistance	K	DTG of Problem Assistance	See Table A3 for Instructions Enter the number of "L's" in Field L and the number of "O's" in Field M.
DTG FI Started	L, M	DTG Start Fault Isolation	See Table A5 for Instructions
Initial Evaluation	N	DTG of Initial Evaluation	See Table A5 for Instructions
	P	Initial Evaluation	Code Meaning L Link R Route G Group C Circuit S Supergroup H Channel O Other
Initial Evaluation of Source	Q	Evaluation of Source	Code Meaning I In-Station O Out-Station
	R		See Table A5 for Instructions
Final Source Identified	S	DTG of Initial Evaluation of Source	Alongside DTG of Final Source Identified will be an RFO code; enter it in Field T.
	T	RFO	See Table A5 for Instructions
	U	DTG End Fault Isolation	Code Meaning Item 78 B Card ID Item 79 P Form ID Item 80 Not Used
	V	Control	

Figure A-31. Data Transferral - AFTEC Form 173 Sheet 2 of 3



[illegible]

AFTEC FORM NO. 173A	CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION		
Site	A	Site	See Table A3 for site codes.	
	H	Test Mode	Code      Meaning A      Indicates times on this card are automatic M      Indicates times on this card are manual	
Type Test	J	Type Test	Code      Meaning ASQ      ASAP Testing (Quarterly) CRQ      Crypto Test (Quarterly) DEO      Out of Service Test of Delay Equalizers DHO      Out of Service Test of Data Hubs D1      Out of Service Test of D1 Parameter D2      Out of Service Test of D2 Parameter ES      Echo Suppressor Test FTA      Out of Service Test (FTA-28) FWQ      Four Wire Test (Quarterly) FWW      Four Wire Test (Weekly) IHA      In House Alignment LOS      Out of Service Test of LIN Complex LT      Link Test MD7      Out of Service Test of MD700 Modems MPO      Out of Service Test of Monitor Printers MTC      Out of Service Test of Monitor Teletype Cabs N1      Out of Service Test of N1 Parameter N2      Out of Service Test of N2 Parameter N3      Out of Service Test of N3 Parameter OS      Out of Service Test (No Parameters Given) PC      Peg Count PG2      Out of Service Test of Pg-21 PT      PABX Tests QAT      Quality Assurance Testing QAW      Quality Assurance Testing (Weekly) ROS      Out of Service Test of 608D Regenerators RT      Regenerator Test SA      System Alignment Test SDQ      Spare DC Channel or Landline Test (Quarterly) SLT      SF Leakage Test STQ      Station Test Tone (Quarterly) SVQ      Spare Voice Channel Testing (Quarterly) SYO      Out of Service Test of Station Yacker S1      Out of Service Test of S1 Parameter S2      Out of Service Test of S2 Parameter S3      Out of Service Test of S3 Parameter	

Figure A-32. Data Transferral - AFTEC Form 173A Sheet 2 of 4

AFTEC FORM NO. 173A	CARD NO. B (Continued)	TRANSFERRAL INSTRUCTIONS
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION
		<p>Code Meaning</p> <p>TAQ Out of Service Test of IA-182 (Quarterly)</p> <p>TQS Out of Service Test of Teletype</p> <p>VTQ Out of Service Test of VFCT (Quarterly)</p> <p>V1 Out of Service Test of V1 Parameter</p> <p>V2 Out of Service Test of V2 Parameter</p> <p>WC WINK/KP Check</p> <p>XL In Service Test</p> <p>XLA In Service VF or Audio Test</p> <p>XLD In Service DC Test</p> <p>IC IST Check (European)</p> <p>ICC IST Check (CCNUS)</p> <p>(Use rightmost item (Item 27) to indicate whether the out of service tests are annual (A), quarterly (Q), or semi-annually (S).</p> <p>If provide-l, see Table A5 for instructions</p> <p>If provide i, see Table A5 for instructions</p> <p>Direct Transfer</p> <p>If no start/stop times given, enter the date in this field. The date should be left justified.</p> <p>See Table A5 for instructions</p> <p>See Table A5 for instructions</p> <p>Code Meaning</p> <p>Item 78 B Card ID</p> <p>Item 79 Q Form ID</p> <p>Item 80 Not Used</p>
Number of Circuits	K	DTG Start
Date	N	DTG Stop
Manual or Automated Total Time	O	Number of Links or Circuits Tested
	P	DTG of Test
	T	Total Time
	V	Control

Figure A-32. Data Transferral - AFTEC Form 173A Sheet 3 of 4

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
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1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													

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AFTEC FORM NO. 173B		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION		FIELD	DESCRIPTION		
Site	A	Site	See Table A3 for Site Codes		
DCS Route Number	D	Route ID	Direct Transfer		
Remarks	G	Type Test (If provided)	Code	Meaning	
			BB	Baseband loading (left justified)	
			RL	Wideband RSL (left justified)	
			BB RL	Both baseband loading and wideband RSL	
	H	Test Mode	Code	Meaning	
			A	Indicates times on this card are automatic	
			M	Indicates times on this card are manual	
Number of Channels Tested	J	Total Number of Links, Circuits, Channels Tested	Direct Transfer		
Manual (or ATEC) Start Time	K	DTG Start	See Table A5 for instructions		
Manual (or ATEC) Stop Time	N	DTG Stop	See Table A5 for instructions		
Manual (or ATEC) Total Time	O	Total Time	Direct Transfer		
Date	P	DTG OF Test	Note: For those entries which only indicate a total time in minutes and no start/stop times, put the date in this field. See Table A5 for instructions. (left justified)		
	V	Control	Code	Meaning	
			Item 78	B	Card ID
			Item 79	R	Form ID
			Item 80		Not Used

Figure A-33. Data Transferral - AFTEC Form 173 B Sheet 2 of 3

A	P	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
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Figure A-33. Data Transferral - AFTEC Form 173B Sheet 3 of 3

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FORM 173C		C. REF. B		TRANSFER INSTRUCTIONS									
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION											
Site	A	Site	See Table A3 for Site Codes										
Plotting Start Time	H	Test Mode	Use M to indicate times are manual										
Plotting End Time	K	DTG Start	See Table A5 for Instructions										
Plotting Total Time	N	DTG Stop	See Table A5 for Instructions										
Analysis Start Time	O	Total Time	Direct Transfer										
Remarks	P	DTG Start	See Table A5 for Instructions										
	Q	No. of persons plotting	If noted in the remarks, enter the number of persons performing the plotting.										
	R	No. of persons for analysis	If noted in the remarks, enter the number of persons performing the analysis.										
Analysis Stop Time	S	DTG Stop	See Table A5 for Instructions										
Analysis Total Time	T	Total Time	Direct Transfer										
	V	Control	<table border="0"> <tr> <td>Code</td> <td>Meaning</td> </tr> <tr> <td>Item 78 B</td> <td>Card ID</td> </tr> <tr> <td>Item 79 S</td> <td>Form ID</td> </tr> <tr> <td>Item 80</td> <td>Not Used</td> </tr> </table>			Code	Meaning	Item 78 B	Card ID	Item 79 S	Form ID	Item 80	Not Used
Code	Meaning												
Item 78 B	Card ID												
Item 79 S	Form ID												
Item 80	Not Used												

Figure A-34. Data Transferral - AFTEC Form 173C Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286
287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308
309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374
375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396
397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418
419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462
463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506
507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572
573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638
639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682
683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704
705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726
727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748
749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814
815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836
837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858
859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902
903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946
947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012
1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034
1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078
1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122
1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144
1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166
1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210
1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254
1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276
1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298
1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													

SITE	_____	LKF
MAINTENANCE MAN	_____	P.R.

**LIKE**

**P. R.**

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\* WRITE IN LAST FOUR OF CCSD AS APPLICABLE

AFTEC FORM NO. 173D		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION			
Site	A	Site	See Table A3 for Site Codes		
CCSD	G	CCSD Number	Use Last Four Digits of Number		
Check if ATEC Used	H	Test Mode	Code	Meaning	
			M	If ATEC was not used	
			A	If ATEC was used	
DTG Start	K	DTG Start	See Table A5 for Instructions		
DTG Stop	N	DTG Stop	See Table A5 for Instructions		
Total Time	O	Total Time	See Table A5 for Instructions		
	S	DTG of Test	Note: For those entries which only indicate total times and do not use start/stop times enter the date in this field. See Table A5 for Instructions		
Cust. equip., cond. equip., channel, MUX, Baseband, RF, Path, Other	U	Problems Addressed	Item 70 - Enter a "1" if customer equipment is checked Item 71 - Enter a "1" if condition equipment is checked Item 72 - Enter a "1" if channel is checked Item 73 - Enter a "1" if Mux is checked Item 74 - Enter a "1" if Baseband is checked Item 75 - Enter a "1" if RF is checked Item 76 - Enter a "1" if Path is checked Item 77 - Enter a "1" if Other is checked		
	V	Control	Code	Meaning	
			Item 78	B	Card ID
			Item 79	T	Form ID
			Item 80		Not Used

Figure A-35. Data Transferral - AFTEC Form 173D Sheet 2 of 3



SITE: FEL[illegible]

THE UNIVERSITY OF CHICAGO

Figure A-36. Data Transferral - AFTEC Form 174

AF FORM 174		CARD NO. B		TRANSFER INSTRUCTIONS	
FUNCTIONAL DESCRIPTION		FIELD	DESCRIPTION		
Site		A	Site	See Table A3 for Site Codes See Table A4 for Codes. Note: If test mode is manual, do not use this field. Use last four digits Code      Meaning A      Indicates the times on this card are automatic M      Indicates the times on this card are manual N      Indicates the times on this card are NSS See Table A5 for Instructions Code      Meaning Y      Yes N      No U      Unknown	
AIEC Equipment Used		B	ATE Type		
CCSD		G	CCSD		
FI Mode		H	Test Mode		
Time FI Started		K	DTG Start	See Table A5 for Instructions Code      Meaning Y      Yes N      No U      Unknown	
CKT Quality Satisfactory		L	CKT Quality		
Time FI Completed		N	DTG Stop		
Black Level		P	Measurement Data		
White Level		S	Measurement Data	Direct Transfer Direct Transfer Direct Transfer Code      Meaning Item 78      B      Card ID Item 79      U      Form ID Item 80      Not Used	
Carrier Frequency		U	Measurement Data		
		V	Control		

Figure A-36. Data Transferral - AFTEC Form 174 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
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265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286
287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308
309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330
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375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396
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419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462
463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506
507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572
573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638
639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682
683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704
705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726
727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748
749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814
815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836
837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858
859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902
903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946
947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012
1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034
1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078
1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122
1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144
1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166
1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210
1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254
1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276
1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298
1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342
1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364
1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386
1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408
1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430
1431	1432	1433	1434	1435	1436	1437	1438	1439													

## SITE: FEL

Notes on back of form.

Sheet 1 of 3

CARD NO. B		TRANSFER INSTRUCTIONS	
FIELD	DESCRIPTION		
A	Site	<p>See Table A3 for Site Codes</p> <p>See Table A4 for Codes</p> <p>Note: If test mode is manual, do not use this field</p> <p>Direct Transfer</p> <p>Use last four digits</p> <p>Code      Meaning</p> <p>A      Indicates times and measurements on this card are automatic</p> <p>M      Indicates times and measurements on this card are manual</p> <p>N      Indicates times and measurements on this card are NSS</p> <p>See Table A5 for Instructions</p> <p>See Table A5 for Instructions</p> <p>Note: A second card will have to be used for this form. They will be identical from fields A to K.</p> <p>On Card 1 Item 80 will be set to 1 and on Card 2 Item 80 = 2. Also Field U will be used as subchannel frequency correctness on card 1 and subchannel level correctness on card 2.</p> <p>Direct Transfer</p> <p>Note: For second card leave this field blank</p> <p>Item 59 - Use "Y" for yes and "N" for no</p> <p>Items 60, 61, 62, 63 used to indicate frequency error (number should be right justified)</p> <p>Note: For second card leave this field blank</p> <p>Item 67 - Use "Y" for yes and "N" for no</p> <p>Items 68, 69 - Use to indicate color</p> <p>Note: For first card leave this field blank</p> <p>Item 70 - Use "Y" for yes and "N" for no</p> <p>Item 71 - Use to indicate mark frequency (M) or space frequency (S)</p> <p>Items 72, 73, 74, 75 - Use to indicate frequency offset (number should be right justified)</p> <p>Note: For second card field U will be used for subchannel level correctness as follows:</p> <p>Item 70 - Use "Y" for yes and "N" for no</p> <p>Item 71, 72 - Use to indicate color</p> <p>Items 73, 74, 75, 76, 77 - Use to indicate level (number should be right justified)</p>	
B	ATEC Equipment Used		
E	Subchan Number		
G	VFCT CCSD		
H	FI Mode		
K	Time FI Started		
N	Time FI Completed		
P	Composite VFTG Level		
S	Frequency Offset Stability		
T	Subchannel Distortion Satisfactory		
U	Subchannel Frequency Correctness or Level Correctness		
V	Control	<p>Item 78      B      Cole      Meaning</p> <p>Item 79      V      Card ID</p> <p>Item 80      1      Form ID</p> <p>Item 80      2      Specifies field U as subchannel frequency correctness</p> <p>Item 80      2      Specifies field U as subchannel level correctness</p>	

Figure A-37. Data Transferral - AFTEC Form 175 Sheet 2 of 3

[illegible]

Figure A-37. Data Transferral - AFTEC Form 175

SITE: FEL[illegible]

Put Remarks on back of Form. Notes are on back of form.

Figure A-38. Data Transferral - AFTEC Form 176

GENERAL DESCRIPTION	CARD NO. B		DESCRIPTION	TRANSFER INSTRUCTIONS
	FIELD			
Site ATEC Equipment Used  CCSD FI Mode	A	Site		See Table A1 for Site Codes See Table A1 for Codes. Note: If test mode is manual, do not use this field. Use last four digits Code      Meaning A      Indicates times and measurements on this card are automatic M      Indicates times and measurements on this card are manual N      Indicates times and measurements on this card are NSS See Table A5 for Instructions Use "Y" for yes and "N" for no See Table A5 for Instructions. Note: Two cards will have to be filled out for this form. The first will have the 9HEE, 9HDZ and 9HDY levels in fields P, S and U respectively, while the second will have the composite level entered in field P. Item 80 of card 1 will be 1 and 2 for card 2. They will be identical from field A to K.
	B	ATE Type		
	G	CCSD		
	H	Test Mode		
Time FI Started CKT Quality Satisfactory Time FI Completed	K	DTG Start Fault Isolation		Direct Transfer Note: For Card 1 enter 9HEE level and for Card 2 enter composite level Direct Transfer Note: For Card 1 enter 9HDZ level and for Card 2 leave this field blank Direct Transfer Note: For Card 1 enter 9HDY level and for Card 2 leave this field blank
	L	CKT Quality		
	N	DTG End Fault Isolation		
9HEE Level or Composite Level 9HDZ Level 9HDY Level	P	Measurement Data		Code      Meaning Item 78      B      Card ID Item 79      W      Form ID Item 80      1      Specifies field P as 9HEE level 2      Specifies field P as composite level
	S	Measurement Data		
	U	Measurement Data		
	V	Control		

Figure A-38. Data Transferral - AFTEC Form 176 Sheet 2 of 3



## SITE: FEL

Put remarks on back of form. Notes are on back of form.

Sheet 1 of 3

FORM NO. 177		CARD NO. B		TRANSFER INSTRUCTIONS	
TEST TRY DESCRIPTION	FIELD	DESCRIPTION			
Site	A	Site		See Table A3 for Site Codes	
ATEC Equipment Used	B	ATE Type		See Table A4 for Codes	
TX or RX	C	TX or RX		Note: If test mode is manual, do not use this field	
FI Mode	H	Test Mode		Code T TX R RX	Meaning
Time FI Started	K	DTG Start Fault Isolation		Code A M N	Meaning Indicates the times and measurements on this card are automatic Indicates the times and measurements on this card are manual Indicates the times and measurements on this card are NSS
Time FI Completed or RX RSL	N	DTG End Fault Isolation		See Table A5 for Instructions	
Impulse Noise Count	O	Impulse Noise Count		See Table A5 for Instructions	
EST Link ICN (VF Level) or BBL	P	VF Level ICN or BBL		Note: Two cards will have to be filled out for this form. They will be identical from fields A through K. Card one will have Item 80 set to 1 and Card two will have Item 80 set to 2. For the second card Field N will contain the RX RSL entry.	
EST Link ICN (BB Level) or TX power	S	BB Level ICN or TX Power		Direct Transfer	
Phase Jitter	T	Phase Jitter		Note: For Card 1 enter VF level ICN and for Card 2 enter the BBL measurement	
Level Stability or Frequency Stability	U	Level or Frequency Stability		Direct Transfer	
	V	Control		Note: For Card 1 enter BB level ICN and for Card 2 enter the TX power measurement	
				Direct Transfer	
				Note: For Card 1 enter the phase jitter measurement and for Card 2 leave this field blank	
				Item 70 - Use "H" to indicate level or frequency is high and "L" to indicate level or frequency is low.	
				Items 71, 72, 73 - Use to indicate low end of range (number should be right justified)	
				Items 74, 75, 76 - Use to indicate high end of range (number should be right justified)	
				Code B X 1 2	Meaning Card ID Form ID Specifies fields N, P, S, U as DTG End FI, VF ICN, BB ICN, and level stability respectively Specifies fields N, P, S, U as RX RSL, BBL, TX Power and frequency stability respectively.

Figure A-39. Data Transferral - AFTEC Form 177 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	LM	N	O	P	QR	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980
981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000

Figure A-39. Data Transferral - AFTEC Form 177 Sheet 3 of 3

SITE		FEL		TEST TEAM MEMBER							
DATE											
MEASUREMENT		ATE USED		ATEC METHOD		SUCCESS**		MANUAL METHOD		REMARKS	
				START TIME		STOP TIME		START TIME		STOP TIME	
				VALUE		VALUE		VALUE		VALUE	
RSL	IQCS	53180710	53180720	-15.8	Yes						12 Channels
<p>* TYPE OF MEASUREMENT: ICN (3KC WEIGHTED) NET LOSS, IMPULSE NOISE, BASE BAND LOADING (BBL), RSL, VF LEVEL, C-MSG, SLOTTED NOISE, AND VFCT TESTS</p> <p>** ENTER "YES" IF ATEC WAS CAPABLE OF MAKING THE MEASUREMENT.</p> <p>ENTER "NO" IF ATEC WAS NOT CAPABLE OF MAKING THE MEASUREMENT.</p> <p>***ENTER NUMBER OF CHANNELS TESTED (AS APPLICABLE).</p>											

AFTEC FORM NO. 178		CARD NO. B		TRANSFER INSTRUCTIONS	
FORM ENTRY DESCRIPTION	FIELD	DESCRIPTION			
Site	A	Site		See Table A3 for Site Codes	
ATE Used	B	ATE Type		See Table A4 for Codes	
	H	Test Mode		Note: If test mode is manual, do not use this field	
	J	Measurement Type		<p>Code      Meaning</p> <p>A      Indicates times and measurements on this card are automatic</p> <p>M      Indicates times and measurements on this card are manual</p> <p>Code      Meaning</p> <p>WF      ICN (3 KC weighted)</p> <p>IN      Impulse Noise</p> <p>BBL      Base Band Loading</p> <p>RSL      Receive Level</p> <p>AV      VF Level</p> <p>WN      C-Msg</p> <p>SLN      Slotted Noise</p> <p>VT      VFCT Test</p> <p>IPN      Out of service Test</p> <p>OT      Other</p>	
Manual (or ATEC) Start Time	K	DTG Start		See Table A5 for Instructions	
Manual (or ATEC) Stop Time	N	DTG Stop		See Table A5 for Instructions	
Manual (or Automated) Value	P	Measurement Data		Direct Transfer	
Success	Q	Success		Use "Y" for yes and "N" for no	
Remarks	T	Number of Channels Tested		Direct Transfer	
	U	PMP Route Number		Direct Transfer (left justified)	
	V	Control		<p>Code      Meaning</p> <p>Item 78      B      Card ID</p> <p>Item 79      Y      Form ID</p> <p>Item 80           Not Used</p>	

Figure A-40. Data Transferral - AFTEC Form 178 Sheet 2 of 3

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152
153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174
175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196
197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218
219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262
263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284
285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328
329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372
373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394
395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438
439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482
483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504
505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526
527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548
549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592
593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614
615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636
637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658
659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702
703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724
725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746
747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768
769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812
813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834
835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856
857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878
879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922
923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944
945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966
967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988
989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010
1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032
1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054
1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076
1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098
1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120
1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142
1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164
1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186
1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208
1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230
1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252
1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274
1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296
1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318
1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340
1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362
1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384
1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406
1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428
1429	1430	1431	1432	1433	1434	1435	1436	1437	14												

APPENDIX B - BMD SAMPLE DATA OUTPUT

BMD01D  
SIMPLE DATA DESCRIPTION

1. GENERAL DESCRIPTION

- a. This program computes simple averages and measures of dispersion of variables, omitting those values which the user specifies for exclusion from the computations.

Methods for specifying the exclusion of blanks and certain special values from the computations are given below.

<u>Method Number</u>	<u>Method</u>
0	Set all blanks equal to 0; these and all other numbers will enter computations.
1	Blanks are not counted; all numbers will enter computation.
2	Blanks and/or pre-specified special values not counted; all other numbers will enter computations.
3	Pre-specified special values not counted; blanks set equal to 0 and entered with all other numbers into computations.

- b. Output for this program includes:

- (1) Means
- (2) Standard deviations
- (3) Standard errors of means
- (4) Maximum values
- (5) Minimum values
- (6) Ranges
- (7) Sample sizes (see the four methods listed above).

- c. Limitations per problem:

- (1)  $p$ , number of variables ( $p \leq 999$ )

- (2) n, number of cases ( $n \leq 99,999$ )
- (3) k, number of Variable Format Cards ( $1 \leq k \leq 10$ )
- (4) c, number of special values specified for methods 2 or 3  
( $0 \leq c \leq 8$ )
- (5) t, number of Transgeneration Cards ( $0 \leq t \leq 100$ )
- (6) q, number of variables added after transgeneration  
( $-998 \leq q \leq 999$ ), ( $p+q \leq 1000$ )

d. Estimation of running time and output pages per problem:

$$\begin{aligned} \text{Number of seconds} &= 2 + [(p+q)n/100] && \text{(for IBM 7094)} \\ \text{Number of pages} &= 1 + [(p+q)/50] \end{aligned}$$

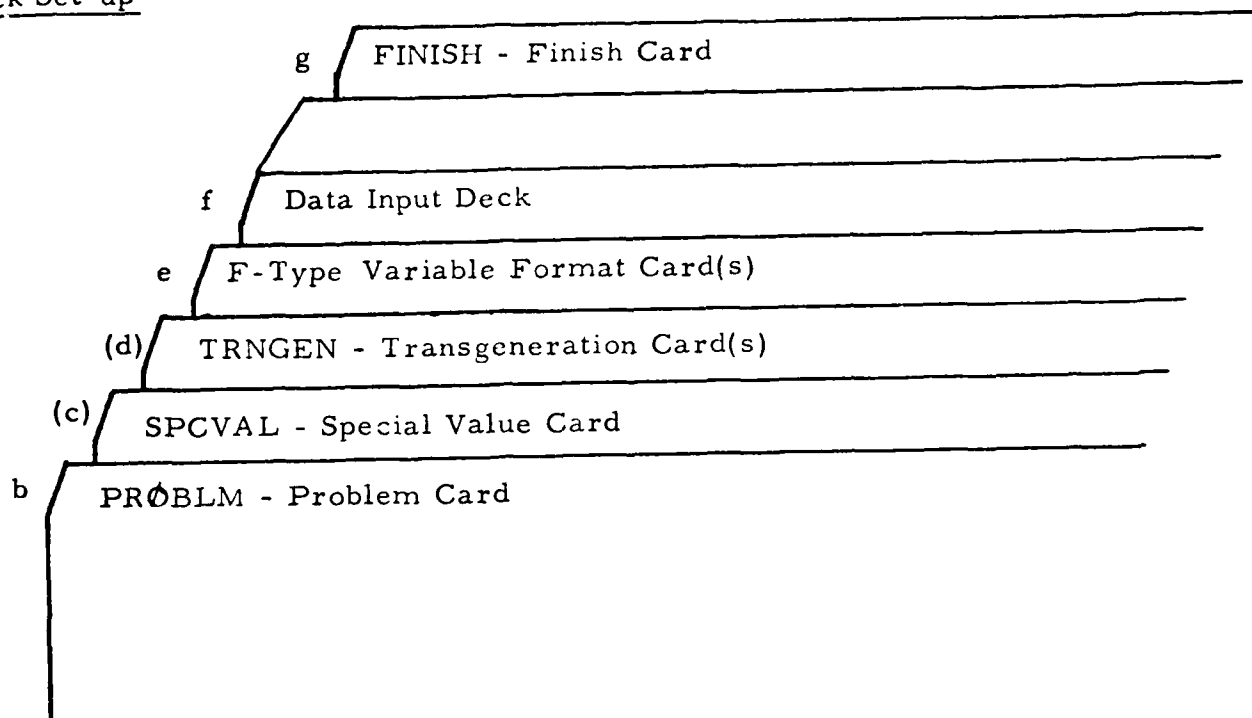
e. The program allows transgeneration of the input data. Codes 1-17, 20-24, and 40 of the transgeneration list may be used.

## 2. ORDER OF CARDS IN JOB DECK

Cards indicated by letters enclosed in parentheses are optional.  
All other cards must be included in the order shown.

- a. System Cards [Introduction, IV]
- b. Problem Card
- (c.) Special Value Card
- (d.) Standard Transgeneration Card(s) [Introduction, III-B]
- e. F-type Variable Format Card(s) [Introduction, III-C]
- f. DATA INPUT Cards [Introduction, II]  
(Place data input deck here  
if data input is from cards.)
- ...
- Repeat b. through f. as desired.
- ...
- g. Finish Card [Introduction, III]

### Deck Set-up



### 3. CARD PREPARATION (SPECIFIC FOR THIS PROGRAM)

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction.

#### b. Problem Card (One Problem Card for each problem)

Col. 1-6	PRØBLM	(Mandatory)
Col. 7-12	Alphanumeric problem code	
Col. 13-17	Number of cases ( $n \leq 99,999$ )	
Col. 18-20	Number of variables ( $p \leq 999$ )	
Col. 21-24	Number of variables added after transgeneration ( $-998 \leq q \leq 999$ ) ( $p+q \leq 1000$ )	
Col. 25	Method number (See Section 1-a.)	
Col. 26-28	Number of Transgeneration Cards ( $0 \leq t \leq 100$ )	

Col. 29      Number of special values ( $0 \leq c \leq 8$ )

Col. 30-68   Blank

Col. 69, 70   T   If input data is from tape T ( $T \leq 16$ ,  $T \neq 5$ ,  $T \neq 6$ );  
                         otherwise leave blank.

Col. 71, 72   Number of Variable Format Cards ( $1 \leq k \leq 10$ )

(c.) Special Value Card

Col. 1-6      SPCVAL                      (Mandatory)

Col. 7-12      First special value\*

Col. 13-18    Second special value\*

                ...

Col. 49-54    Eighth special value\*

4. COMPUTATIONAL PROCEDURE

Let  $X_{ij}$  be the  $j^{\text{th}}$  variable of the  $i^{\text{th}}$  case.

Step 1.    If  $X_{ij}$  value satisfies the stated conditions for inclusion in the computation,  $X_{ij}$  is included in the computation of  $\sum_i X_{ij}$ ,  $\sum_i X_{ij}^2$ ,  $n_j$ ,  $\text{Max}_i X_j$ ,  $\text{Min}_i X_j$ ; otherwise the value does not enter the computation.

Step 2.    Mean                       $\frac{1}{n_j} \sum_i X_{ij}$

Variance                       $\frac{1}{(n_j-1)} \left[ \sum_i X_{ij}^2 - \frac{\left( \sum_i X_{ij} \right)^2}{n_j} \right]$

Standard                       $\sqrt{\text{Variance}}$   
Deviation

Standard Error  
(of Mean)                      (Standard Deviation) /  $\sqrt{n_j}$

Range                       $\text{Max } X_j - \text{Min } X_j$

\*Keypunch the decimal. If the decimal is not punched, the values will be read with the decimal assumed to be at the right of the field.

PROBLEMTEST 500006042 CC930093

1

SPECIAL 99 188 170

TRANSGEN04308001000010

TRANSGEN04410002000003

TRANSGEN04509003000010

TRANSGEN04611020000021

TRANSGEN04712018000019

TRANSGEN04813022000022

TRANSGEN04915007000060

TRANSGEN05040009000001

4000069000065000063000058

TRANSGEN05101010

(7X, 21F3.0, /7X, 21F3.0)

5314106189170155142143 99064063069090065 99110090085100085 99018033188

1111107018024023025020045025040025079077069057057041066067767053060040

1922113159156170132141144040045035056045074055075050070055170023028031

1922113044031035030035045135040055067059067061057051067063064049056050

2022108180169161142153135053062056071075077065075070795100100020020023

2022108036026041025025030050035050060053050047051046043051050054051061

2123102163162159154155165047046049069076103050050055090105115018021019

2123109029029032020025025040045035053060061050050044063061056057056053

2212508153159139147147141033035036069088091035040040100120105028031039

2212508031033032035055070040060035070061057056056046065061060050044040

232141317617216415917215503003403204310107803 045040060125115010013023

232141302403103801503504503505012510010008073039044098094079071051044

FINISH

### Problem Test 5

6 cases, n

42 variables, p

9 variables added after

transgeneration, q

Method 3 used; therefore specified special values will not enter the computations. Blanks will enter as zeros.

9 Transgeneration Cards

3 specified special values

### Special Value Card

Special values are: 99, 188, 170.

### Variable Format Card

The variable format statement directs the entry of Col. 8-70 in 3-digit fields on each of the two cards per case.

### Transgeneration Cards

$$X_1 + 10 \rightarrow X_{43}$$

$$(X_2)^3 \rightarrow X_{44}$$

$$(X_3)^{10} \rightarrow X_{45}$$

$$(X_{20}) + (X_{21}) \rightarrow X_{46}$$

$$(X_{18}) - (X_{19}) \rightarrow X_{47}$$

$$(X_{22})(X_{22}) \rightarrow X_{48}$$

$$\left\{ \begin{array}{l} \text{if } X_7 \geq 60, X_{49} = 1 \\ \text{if } X_7 < 60, X_{49} = 0 \\ \text{if } X_9 = 69, 65, 63 \text{ or } 58; X_{50} = 1 \\ \text{otherwise, } X_{50} = X_{50} \end{array} \right.$$

$$\sqrt{X_{10}} \rightarrow X_{51}$$

MMX10 - SIMPLE DATA DESCRIPTION - REVISED JANUARY 5, 1971  
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CARD  
 PROGRAM NUMBER TEST # METHOD NUMBER 3  
 NUMBER OF CASES 6 NUMBER OF SPECIAL VALUES 3  
 NUMBER OF VARIABLES 42 NUMBER OF TRANSGENERATIONS 9  
 NUMBER OF VARIABLES ADDED 9 INPUT TAPE NUMBER 5  
 NUMBER OF VARIABLE FORMAT CARDS 1

SPECIAL VALUES CARD  
 99.CC000 168.CC000 170.CC000

VARIABLE FORMAT CARD(S)  
 (1X,21F3.0,7X,21F3.0)

TRANS GENERATOR CARD(S)

CARD	NEW NO. VARIABLE	TRANS CODE	ORIG. VAR (A)	ORIG. VAR (B) CR CONSTANT	TYPE-40 CONSTANTS			
1	43	8	1	10.CC0000				
2	45	10	2	3.CC0000				
3	45	9	3	10.CC0000				
4	46	11	20	21.CC0000				
5	47	12	18	19.CC0000				
6	48	13	22	22.CC0000				
7	49	15	7	60.CC0000				
8	50	40	9	1.CC0000	59.CC0000	65.CC0000	63.CC0000	58.CC0000
9	51	1	10	-0.0				

VAR NO	MEAN	S.D.	S.E. OF MEAN	SAMPLE	MAXIMUM	MINIMUM	RANGE
1	166.2000	11.4324	5.1127	5	180.0000	153.0000	27.0000
2	155.6000	5.7249	2.3367	5	172.0000	159.0000	13.0000
3	155.6000	5.6387	4.4000	5	164.0000	139.0000	25.0000
4	146.1667	9.7256	3.8072	6	159.0000	133.0000	26.0000
5	151.8333	11.2857	4.6074	6	172.0000	141.0000	31.0000
6	148.CC000	11.9833	5.3479	5	160.0000	135.0000	25.0000
7	44.5000	12.8179	5.2329	6	64.0000	30.0000	34.0000
8	47.5000	12.6293	5.1559	6	63.0000	34.0000	29.0000
9	46.1666	14.3247	5.5257	6	69.0000	32.0000	37.0000
10	60.2333	15.7545	6.4481	6	90.0000	43.0000	47.0000
11	75.0000	19.2146	7.8443	6	101.0000	45.0000	56.0000
12	84.6000	12.1778	5.4461	5	103.0000	74.0000	29.0000
13	57.5000	28.7663	11.7438	6	110.0000	30.0000	80.0000
14	62.5000	20.1866	8.2412	6	90.0000	40.0000	50.0000
15	56.6666	17.7551	7.2648	6	85.0000	40.0000	45.0000
16	95.8333	16.6572	6.9819	6	100.0000	60.0000	40.0000
17	98.2333	25.6255	10.4616	6	125.0000	55.0000	70.0000
18	108.7500	7.5000	3.7500	4	115.0000	100.0000	15.0000
19	19.5000	5.9517	2.4461	5	28.0000	10.0000	18.0000
20	24.2333	7.6233	3.1163	6	33.0000	13.0000	20.0000
21	27.0000	8.0000	3.5777	5	39.0000	19.0000	20.0000
22	30.2333	9.0921	3.7118	6	44.0000	18.0000	26.0000
23	25.0000	3.4059	1.3904	6	33.0000	24.0000	9.0000
24	33.5000	6.2209	2.5357	6	41.0000	23.0000	18.0000
25	25.0000	7.0711	2.8867	6	35.0000	15.0000	20.0000
26	32.5000	12.5459	5.1235	6	55.0000	20.0000	35.0000
27	43.2333	15.7056	6.4118	6	70.0000	25.0000	45.0000
28	54.1667	40.4249	16.5034	6	135.0000	25.0000	110.0000
29	45.0000	8.0443	3.6515	6	60.0000	35.0000	25.0000
30	54.1666	36.3891	14.8558	6	125.0000	25.0000	100.0000
31	71.5000	16.5257	6.7466	6	100.0000	53.0000	47.0000
32	48.2333	17.4547	7.1258	6	100.0000	53.0000	47.0000
33	65.5000	13.4127	5.4757	6	89.0000	50.0000	39.0000
34	57.2333	5.1757	3.7476	6	73.0000	47.0000	26.0000
35	51.6667	6.5186	2.8245	6	57.0000	39.0000	18.0000
36	45.2333	3.7267	1.3581	6	51.0000	41.0000	10.0000
37	67.0000	17.4522	7.2065	6	98.0000	43.0000	55.0000
38	56.1666	14.4208	5.6889	6	94.0000	51.0000	43.0000
39	62.6666	5.0533	4.0758	6	79.0000	50.0000	29.0000
40	55.6667	8.0416	3.2530	6	71.0000	49.0000	22.0000
41	57.0000	5.8557	2.2803	6	60.0000	44.0000	16.0000
42	48.0000	8.2704	3.3764	6	61.0000	40.0000	21.0000
43	176.2000	11.4324	5.1127	5	190.0000	163.0000	27.0000
44	455.2154.CC000	429372.2400	19021.1250	5	5038446.0000	4019676.0000	1064770.0000
45	154.5000	49.1869	44.0000	5	1640.0000	1340.0000	250.0000
46	69.0000	14.7671	6.4234	5	70.0000	36.0000	34.0000
47	14.7500	13.4505	6.7253	4	105.0000	77.0000	28.0000
48	94.9495	570.3572	232.8474	6	1936.0000	324.0000	1612.0000
49	0.1667	0.4082	0.1667	6	1.0000	0.0	1.0000
50	0.1667	0.4082	0.1667	6	1.0000	0.0	1.0000
51	8.0944	0.8174	0.4031	6	9.4868	6.5574	2.9294

BMD02D  
CORRELATION WITH TRANSGENERATION  
(Boolean Selection of Cases)

1. GENERAL DESCRIPTION

a. This program computes simple correlation coefficients, averages and measures of dispersion on entering variables and/or transgenerated variables from selected cases whose values for specified variables have a precise logical relationship in agreement with a specified Boolean expression.

b. Output from this program includes:

- (1) Sums
- (2) Means
- (3) Cross-product deviations
- (4) Standard deviations
- (5) Variance - covariance matrix
- (6) Correlation matrix

Optional output includes:

- (7) One-page cross-tabulation plots of any two variables, automatically scaled to 50 (vertical) by 100 (horizontal) character spaces or units.

c. Limitations per problem:

- (1)  $p$ , number of original variables ( $2 \leq p \leq 135$ )
- (2)  $n$ , number of original cases ( $2 \leq n \leq 99,999$ )
- (3)  $j$ , number of Plot Selection Cards ( $0 \leq j \leq 99$ )
- (4)  $q$ , number of variables added to the original set after transgeneration ( $-133 \leq q \leq 133$ ), ( $2 \leq p + q \leq 135$ )
- (5)  $b$ , number of Case Selection Cards ( $0 \leq b \leq 9$ )
- (6)  $m$ , number of Transgeneration Cards ( $0 \leq m \leq 150$ )
- (7)  $k$ , number of Variable Format Cards ( $1 \leq k \leq 10$ )

- d. Estimation of running time and output pages per problem:

Number of seconds =  $2 + [(p+q)n/100] + 30j$  (for IBM 7094)

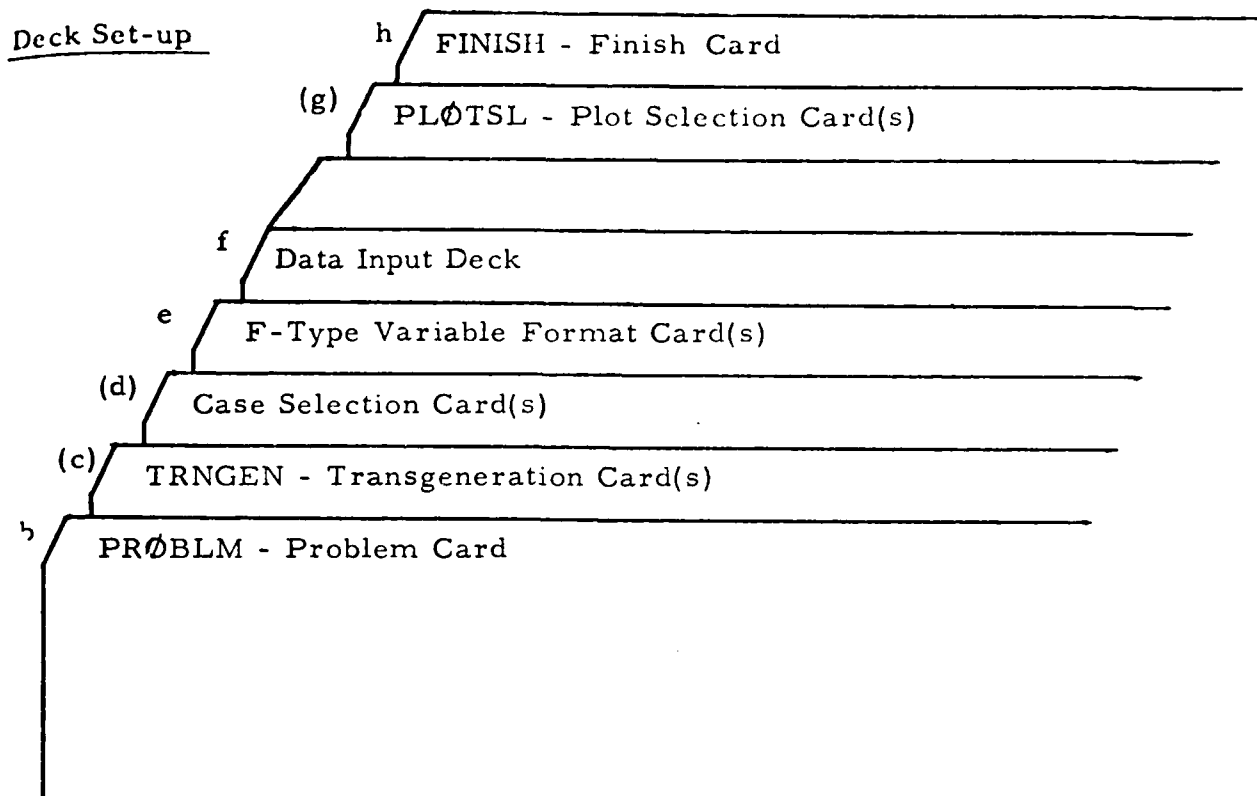
Number of pages =  $4 + [(p+q)/4] + 1$  page per plot

- e. The program allows transgeneration of the input data. Codes 01, 02, ..., 16 and 41 of the transgeneration list may be used.
- f. A special feature of this program is the selection of cases from the input data by specifying a Boolean expression. A case is accepted if it is in agreement with the expression; otherwise the case is skipped. The expression consists of variables and constants involving relationships of equality or inequality written in a logical form using the operations AND and OR.

## 2. ORDER OF CARDS IN JOB DECK

Cards indicated by letters enclosed in parentheses are optional.  
All other cards must be included in the order shown.

- a. System Cards [Introduction, IV]
- b. Problem Card
- (c.) Standard Transgeneration Card(s) [Introduction, III-B]
- (d.) Case Selection Card(s)
- e. F-type Variable Format Card(s) [Introduction, III-C]
- f. DATA INPUT Cards [Introduction, II]  
(Place data input deck here if  
data input is from cards.)
- (g.) Plot Selection Card(s)
- ...
- Repeat b. through (g.) as desired.
- ...
- h. Finish Card [Introduction, III]



### 3. CARD PREPARATION (SPECIFIC FOR THIS PROGRAM)

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction.

#### b. Problem Card (One Problem Card for each problem)

Col. 1-6	PRØBLM	(Mandatory)
Col. 7-12	Alphanumeric problem code	
Col. 13-15	Number of original variables ( $2 \leq p \leq 135$ )	
Col. 16-20	Number of original cases ( $2 \leq n \leq 99,999$ )	
Col. 21, 22	Number of Plot Selection Cards; if none, leave blank. ( $0 \leq j \leq 99$ )	
Col. 23-26	0000	No variables added to, or subtracted from, the original set after transgeneration
	+q	q variables added to the original set after transgeneration ( $2 \leq p+q \leq 135$ )
	-q	q variables subtracted from the original set after transgeneration

Col. 27, 28	00	No Case Selection Cards
	+b	b cards used for Boolean expression; case selection occurs after transgeneration ( $b \leq 9$ )
	-b	b cards used for Boolean expression; case selection occurs prior to transgeneration ( $ b  \leq 9$ )
Col. 29, 30	NO	if matrix of cross products is not desired
Col. 31, 32	NO	if covariance matrix is not desired
Col. 33, 34	NO	if alternate input tape is not to be rewound
Col. 35-65	Blank	
Col. 66-68	000	No transgeneration
	m	m Transgeneration Cards ( $m \leq 150$ )
Col. 69-70	00	Data input from cards
	T	Data input from logical tape T ( $T \neq 5, 6, 1$ )
Col. 71, 72		Number of Variable Format Cards ( $1 \leq k \leq 10$ )

(d.) Case Selection Card(s)

It is often useful to select cases if the value of a particular variable is less than some constant, greater than some constant, equal to some constant, etc. Symbolically,

$V(I) < C$   
 $V(I) > C$   
 $V(I) = C$

where I is the index of some variable. To select only those cases where the values of a variable are between two constants involves the operation AND.

$V(I) > C \text{ AND } V(I) < B$

To select only those cases where either of two variables must satisfy a relationship involves the operation OR.

$V(I) > C \text{ OR } V(J) < B$

Perhaps a more complicated expression is desirable, e. g.,

(V(I)>A) OR (V(J)<B) AND (V(K)=C), ...

According to rule, the entire Boolean expression is either true or false for the case being tested. It is examined from left to right. If an OR is encountered, and the expression preceding the OR is true, the entire expression is considered to be true for this case, and the case is selected for inclusion.

Since parentheses cannot be used for compound AND/OR expressions, AND is assumed to precede OR. The statement

W OR X AND Y OR Z

will operate as

W OR (X AND Y) OR Z.

A Case Selection Card is written as a sequence of conditions separated by an operation. A condition is a variable and a constant separated by a relationship.

Variables: A variable is specified by the alphabetic V and the variable index, e. g., V(100), V(010), V(149), V(008). The three-digit index is necessary; it is enclosed by parentheses.

Constants: Constants are specified by their literal value, e. g., -22.43, .99090, 1.0000, .00009. Five numeric characters with a decimal point are allowed. If the sign (+, -) is used, then only four numeric characters are allowed.

Relationships: Relationships are specified by using the following two-character codes: GT (greater than), LT (less than), GE (greater than or equal to), LE (less than or equal to), EQ (equal to), NE (not equal to).

Operations: Operations are specified by using the following two-character codes: AN (and), OR (or), \*\* (end of expression).

Note:	(not greater than	)	↔	LE
	(not less than	)	↔	GE
	(not greater than or equal to)	↔	LT	
	(not less than or equal to	)	↔	GT

Examples:

(i) (V(002)NEV(100))\*\*

The case is accepted if variable 2 is not equal to variable 100.

(ii) (V(010)GE100.00)AN(V(010)LT200.00)\*\*

The case is accepted if variable 10 is greater than or equal to 100.00 and variable 10 is less than 200.00.

The preparation of the Case Selection Card is as follows:

Col. 1-3	(V(	
Col. 4-6	Three-digit variable index	
Col. 7	)	
Col. 8, 9	Two-character relationship	
Col. 10, 11	V(	} or
Col. 12-14	Three-digit variable index	
Col. 15	)	
Col. 10-15	Constant (Key punch decimal)	}
Col. 16	)	
Col. 17, 18	Two-character operation	

This format is repeated four times per card ending in Column 72. The maximum number of cards is nine. The last operation of the expression must be \*\*. Therefore, the user may specify from one to 36 conditions, each condition followed by an operation, the last operation being \*\*.

(g.) Plot Selection Card(s)

Col. 1-6	PLØTSL	(Mandatory)
Col. 7-9	Index of the base variable (X-axis)	
Col. 10, 11	Number of variables to be cross-plotted with this base variable ( $\leq 20$ )	
Col. 12-14	Index of the 1st variable to be cross-plotted with this base variable	
Col. 15-17	Index of the 2nd variable to be cross-plotted with this base variable	
...		
Col. 69-71	Index of the 20th variable to be cross-plotted with this base variable.	

Each Plot Selection Card is independent. The same or different base variables may be specified on additional cards. The maximum number of Plot Selection Cards is 99.

The following table shows the symbol representations used in plotting frequencies.

1	1	21	L
2	2	22	M
3	3	23	N
4	4	24	O
5	5	25	P
6	6	26	Q
7	7	27	R
8	8	28	S
9	9	29	T
10	A	30	U
11	B	31	V
12	C	32	W
13	D	33	X
14	E	34	Y
15	F	35	Z
16	G	36-41	-
17	H	42-47	+ (&)
18	I	48-54	*
19	J	55-62	\$
20	K	63+	/

#### 4. COMPUTATIONAL PROCEDURE

Let  $X_{ij}$  be the  $j^{\text{th}}$  variable of the  $i^{\text{th}}$  case, where  $i=1,2,\dots,n$ ;  
 $j=1,2,\dots,p+q$ .

For each  $X_{ij}$  value which is accepted for inclusion in the computations,  
the following steps are performed.

Step 1. Sums.

$$\sum_i X_{ij}$$

Step 2. Means.

$$\frac{1}{n} \sum_i X_{ij}$$

Step 3. Cross-product deviations.

$$\sum_i (X_{ij} - X_{.j}) (X_{ik} - X_{.k})$$

Step 4. Standard deviations.

$$\sqrt{\sum_i (X_{ij} - X_{.j})^2 / n - 1}$$

Step 5. Variance - covariance matrix.

$$\frac{\sum_i (X_{ij} - X_{.j}) (X_{ik} - X_{.k})}{n - 1}$$

Step 6. Correlation matrix.

$$\frac{\sum_i (X_{ij} - X_{.j}) (X_{ik} - X_{.k})}{\sqrt{\sum_i (X_{ij} - X_{.j})^2 \sum_i (X_{ik} - X_{.k})^2}}$$

```

#JRALMTEST010040011302600461
#4GEN0025110010000002
#4GEN006110010000004
#4GEN007110010000003
#4GEN008110020000004
#(0011NE50.0001ANIVIC02INE50.0001)**
(12X,413X,F2.01)
111001 00350102500465102050
111023 01050072501074908150
111046 10250075500595003850
111071 05150050500705001251
111094 04650052400665004149
111092 09951101500325104650
111096 10351040500515706150
111090 01851038500255706350
111099 04552034500125307850
111019 10852100500035310551
111038 01152033500835209851
111027 02452053500065304250
111029 09853001500165305051
111046 01650073510965201851
111002 03250029510745011050
111053 00950003510865003752
111009 07849076500274808750
111087 05848037500534702948
111062 10746060500614604050
111021 07159111571066009758
111095 00759108570335904759
111083 07458002571095909658
111081 04056104570205806458
111056 00559094560676007658
111035 09858079560895702456
111038 07058067560935900458
111048 07958058560875903459
111064 02556009560365603057
111028 03254016560485908253
111042 02959018550455804857
111004 03857035550755804456
111056 01956004550195807054
111008 10556281550795804557
111070 03656093551135900657
111072 06156007550435703555
111074 00156113550445806755
111012 06255022550345508656
111068 03955062550095803257
111036 01454103550145701656
111012 03154059550715601356
111056 03354031550695802259
111004 06553041550985410253
111058 00657065541035607554
111052 10656057540505809156
111075 03854068540295505852
111025 0125405254076550553
111052 07654055540955401554
111085 01354107541085405755
111010 04853036541015310153
111055 09253088540565400355
111077 08453030540635409054
111086 03452028540285310653
111089 09452066540585309951
111091 05454284531055500154
111014 10053021530925202850
111057 04453006530085406552
111007 03753076530135408853
111013 02353083530775301755
111032 04152051530215402655
111042 09652025530555211350
111006 09652019530305608452
111023 06051109531115202755
111018 00456035520915701954
111078 02654105521075400953
111079 07754044520265600553
111014 07354095520785506654
111064 072540724520025402153
111082 06454054520625511253
111032 02054074521045401153
111042 08053080520955307153
111033 06453043520655309252

```

00400, 1

The four variables are in Cols. 16, 17; Cols. 21, 22; Cols. 26, 27, Cols. 31, 32.

The first 19 cases will be excluded from computation since  $X_1 \neq 50$  and  $X_2 \neq 50$ .

#### Problem Card

Test 01

4 original variables

113 cases

2 Plot Selection Cards

4 variables,  $q$ , added after transgeneration

1 card for Boolean expression, case selection to occur after transgeneration

4 Transgeneration Cards

Data input from cards

1 Variable Format Card

#### Transgeneration Cards

Variable 1 + variable 2 = variable 5

Variable 3 + variable 4 = variable 6

Variable 1 + variable 3 = variable 7

Variable 2 + variable 4 = variable 8

#### Case Selection Card

Variable 1 not equal to 50 and variable 2 not equal to 50

#### Plot Selection Cards

Cross-plot variable 5 (X-axis) with variable 6

Cross-plot variable 7 (X-axis) with variable 8

```

111008 02153005520005400052
111049 05953085520045408052
111075 08352091520175307752
111043 11252110520315204950
111100 06752089520055307952
111022 07554064511105702551
111084 04753058510015302352
111061 09553042510395200850
111045 06852007510085209151
111065 02152012510995205452
111074 04952090511005305352
111047 11352086510235203651
111065 09552027510245206051
111077 03552045510725411152
111088 02852014510415206251
111008 05051008510475010350
111076 09351017510575105950
111016 04351048510805205651
111050 06351049510425006852
111039 04245047470104507449
111032 02746071450814601445
111027 11146070460494603047
111019 05646106480184509547
111073 05347112460384710745
111053 08247045471124710448
111024 05747063480154704348
111060 10149010460684708548
111048 08748023470924810847
111029 05548077480224710048
111039 10948013490644801149
111047 06949020460114800246
111064 08949032470974807247
111058 09149046480404806948
111095 03049061480374810948
111012 07749096490644803357
111035 11049056450524900750
111045 10449011490844808549
111086 05249078490714907150
111017 01553093470605205247
111030 01751015460075109345
111037 09051057480155209447
111061 02251082480544901049

```

PL0TSL00501006

PL0TSL00701008

FINISH

PM1022 CORRELATION WITH TRANSGENRATION - REVISED JANUARY 24, 1970  
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CODE TEST01  
NUMBER OF VARIABLES 4  
NUMBER OF CASES 113

TRANS GENERATOR CARD(S)

CARD NO.	NEW VARIABLE	TRANS CODE	ORIG. VAR (A)	COIG. VAR (B) CO CONSTANT
1	5	11	1	2.CC00
2	6	11	3	4.CC00
3	7	11	1	3.CC00
4	8	11	2	4.CC00

CASE SELECTION CARDS

A CASE IS ACCEPTED IF  
(VAR1 1) NE 5C.CC01 AN  
(VAR1 2) NE 5C.CC01 ==  
VARIABLE FORMAT CARD(S)  
(12X,4(3X,F2.0))

REMAINING SAMPLE SIZE= 94

SUMS

4960.0300	4F83.CC00	5F06.CC00	4924.C000	9843.0300	9930.0300	9966.CC00	56C7.C000
-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------

MEANS

52.7659	51.9468	53.2553	52.3830	104.7128	105.6383	106.0213	104.3298
---------	---------	---------	---------	----------	----------	----------	----------

CROSS PRODUCT DEVIATIONS

ROW	COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8
1	1004.4430	817.8230	1123.4082	889.4177	1822.6677	2013.0293	2178.4536	1707.2446
2	817.8230	890.7278	997.2690	918.9075	1778.5527	1916.1794	1815.C547	1809.6379
3	1123.4082	997.2690	1401.8623	1075.7986	2120.8904	2477.6663	2525.4749	2073.0715
4	889.4177	918.9075	1075.7986	1166.2013	1878.3269	2242.0059	1965.2197	2085.1125
5	1822.6677	1778.5527	2120.8904	1878.3269	3531.2275	3929.2170	3943.5571	3516.8879
6	2013.0293	1916.1794	2477.6663	2242.0059	3929.2170	4719.6680	4490.6836	4158.1914
7	2178.4536	1815.C547	2525.4749	1965.2197	3943.5571	4490.6836	4653.5297	3780.3237
8	1707.2446	1809.6379	2073.0715	2085.1125	3516.8879	4158.1914	3780.3237	3894.7610

STANDARD DEVIATIONS

3.2871	3.C948	3.8825	3.5412	6.1620	7.1238	7.C741	6.4714
--------	--------	--------	--------	--------	--------	--------	--------

VARIANCE-COVARIANCE MATRIX

ROW	COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8
1	10.8048	8.7938	12.C818	9.5635	19.5996	21.6455	22.8866	18.3575
2	8.7938	9.5777	10.7233	9.8807	18.3715	20.6341	19.5171	19.4585
3	12.C818	10.7233	15.C738	11.5677	22.8052	26.6416	27.1556	22.2911
4	9.5635	9.8807	11.5677	12.5398	19.4444	24.1376	21.1314	22.4206
5	19.5996	18.3715	22.8052	19.4444	37.9702	42.2496	42.4038	37.8160
6	21.6455	20.6341	26.6416	24.1376	42.2496	50.7491	48.2869	44.7117
7	22.8866	19.5171	27.1556	21.1314	42.4038	48.2869	50.C423	40.6486
8	18.3575	19.4585	22.2911	22.4206	37.8160	44.7117	40.6486	41.8792

CORRELATION MATRIX

ROW	COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8
1	1.0000	0.8644	0.9467	0.8215	0.9676	0.9244	0.9842	0.8630
2	0.8644	1.0000	0.8925	0.9015	0.9676	0.9346	0.9515	0.9716
3	0.9467	0.8925	1.0000	0.8414	0.9537	0.9612	0.9817	0.8872
4	0.8215	0.9015	0.8414	1.0000	0.9411	0.9556	0.9416	0.9784
5	0.9676	0.9676	0.9537	0.9411	1.0000	0.9625	0.9728	0.9483
6	0.9244	0.9346	0.9612	0.9556	0.9625	1.0000	0.9582	0.9679
7	0.9842	0.9515	0.9817	0.9416	0.9728	0.9582	1.0000	0.8879
8	0.8630	0.9716	0.8872	0.9784	0.9483	0.9679	0.8879	1.0000

VARIABLE 6	89.500	91.500	94.500	97.500	100.500	103.500	106.500	109.500	112.500	115.500	118.500
119.400 *											
119.800 *											
119.200 *											
117.600 *											
117.000 *											
116.400 *											
115.800 *											
115.200 *											
114.600 *											
114.000 *											
113.400 *											
112.800 *											
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93.000 *											
92.400 *											
91.800 *											
91.200 *											
90.600 *											
90.000 *											
89.400 *											

VARIABLE  
5

VARIABLE 7

89.400	92.400	95.400	98.400	101.400	104.400	107.400	110.400	113.400	116.400	119.400
117.900										117.900
117.300										117.300
116.700										116.700
116.100										116.100
115.500										115.500
114.900										114.900
114.300										114.300
113.700										113.700
113.100										113.100
112.500										112.500
111.900										111.900
111.300										111.300
110.700										110.700
110.100										110.100
109.500										109.500
108.900										108.900
108.300										108.300
107.700										107.700
107.100										107.100
106.500										106.500
105.900										105.900
105.300										105.300
104.700										104.700
104.100										104.100
103.500										103.500
102.900										102.900
102.300										102.300
101.700										101.700
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98.700										98.700
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97.500										97.500
96.900										96.900
96.300										96.300
95.700										95.700
95.100										95.100
94.500										94.500
93.900										93.900
93.300										93.300
92.700										92.700
92.100										92.100
91.500										91.500
90.900										90.900
90.300										90.300
89.700										89.700
89.100										89.100
88.500										88.500
87.900										87.900

BMD05D  
GENERAL PLOT INCLUDING HISTOGRAM

1. GENERAL DESCRIPTION

a. This program provides a method by which graphs and histograms can be produced.

b. Output for this program includes:

(1) GRAPHS. Two methods of plotting are available:

(a) The first method gives a one-page graph which has 50 units vertically and 100 units horizontally. The points are automatically scaled to conform to these dimensions, and a scale is printed both horizontally and vertically. The points (data cards) need be in no special order.

(b) The second method gives a multiple-page graph with as many units vertically as there are values of the base variable. The values of the base variable (data cards) must be ordered and consecutive. The base variable is not scaled. The cross variables are scaled by the computer to conform to a horizontal dimension of 100 units.

(2) HISTOGRAMS

A one-page histogram can be produced, with a maximum of 34 intervals. The width of the interval may be specified; however, if the interval is not specified or if the specified width would result in more than 34 intervals, the program will print comments to this effect and will compute a new width which will give exactly 34 intervals. Scales are printed on the vertical and horizontal axes.

c. Limitations per problem:

- (1) p, number of original variables ( $1 \leq p \leq 500$ )
- (2) n, number of cases ( $2 \leq n \leq 20000$ )
- (3) q, number of variables added to the original set after transgeneration ( $-499 \leq q \leq 499$ )

- (4)  $p+q$ , total number of variables ( $1 \leq p+q \leq 500$ )
- (5)  $(p+q)n$ , total number of data ( $2 \leq (p+q)n \leq 20000$ )
- (6)  $m$ , number of Transgeneration Cards ( $0 \leq m \leq 999$ )
- (7)  $k$ , number of Variable Format Cards ( $1 \leq k \leq 10$ )

d. Estimation of running time and output pages per problem:

Number of seconds = 20 + 10 per 60 graphs or histograms  
(for IBM 7094)

Number of pages = 5 + 1 per graph or histogram  
(page plot)

Number of pages = 5 + 1 per 60 points per graph  
(multiple-page graphs)

e. This program allows transgeneration. Codes 01, 02, ..., 14 of the transgeneration list may be used.

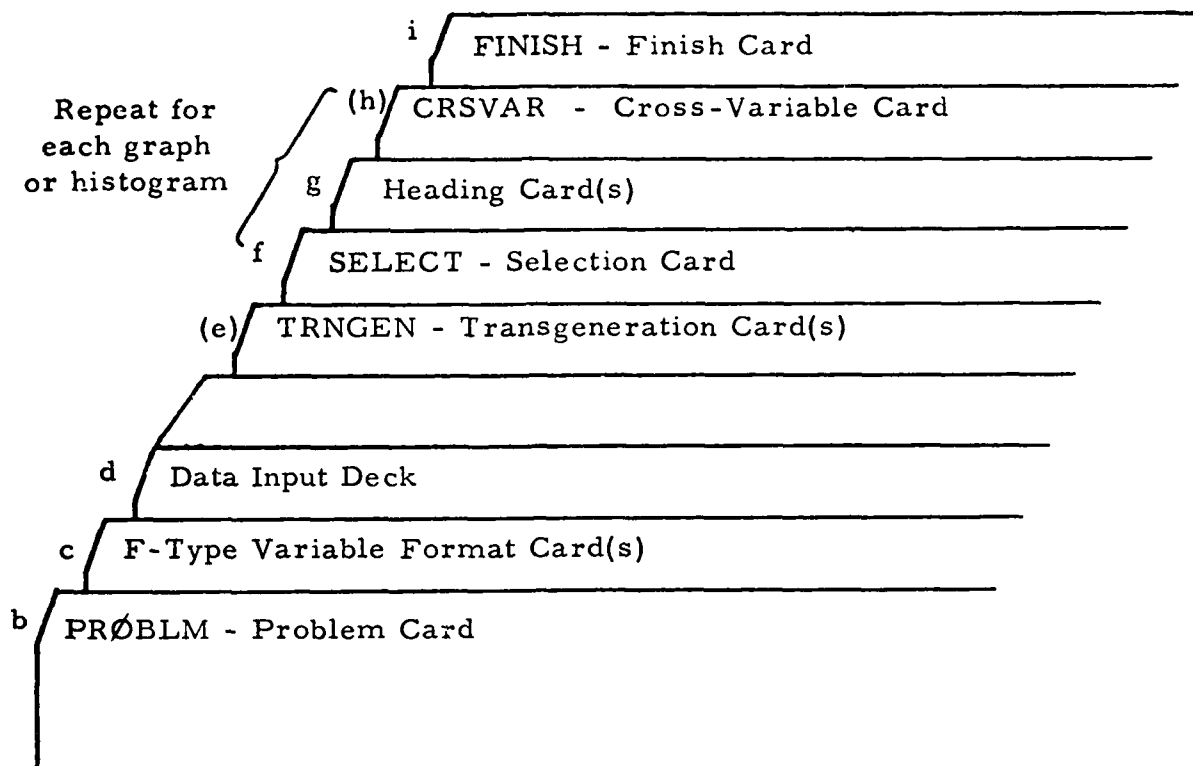
## 2. ORDER OF CARDS IN JOB DECK

Cards indicated by letters enclosed in parentheses are optional.  
All other cards must be included in the order shown.

- a. System Cards [Introduction, IV]
- b. Problem Card
- c. F-type Variable Format Card(s) [Introduction, III-C]
- d. DATA INPUT Cards [Introduction, II]  
(Place data input deck here  
if data input is from cards.)
- (e.) Standard Transgeneration Card(s) [Introduction, III-B]
- f. Selection Card
- g. Heading Card(s)
- (h.) Cross-Variable Card
- ...
- Repeat b. through (h.) as desired
- ...
- i. Finish Card [Introduction, III]

} Repeat for each graph  
or histogram

Deck Set-up:



3. CARD PREPARATION (SPECIFIC FOR THIS PROGRAM)

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction.

b. Problem Card (One Problem Card for each problem)

Col. 1-6      PROBLEM                      (Mandatory)

Col. 7-12     Alphanumeric job code

Col. 13-15    Number of original variables ( $1 \leq p \leq 500$ )

Col. 16-20    Number of cases ( $2 \leq n \leq 20000$ )

Col. 21-23    Number of Selection Cards

Col. 24-27    Number of variables added to original set after transgeneration ( $-499 \leq q \leq 499$ )

Note: ( $2 \leq (p+q)n \leq 20000$ )

Col. 28-63    Blank

Col. 64, 65	NO	If input tape is not to be rewound
Col. 66-68		Number of Transgeneration Cards ( $0 \leq m \leq 999$ )
Col. 69, 70	T	If data input is from logical tape T ( $T \neq 6$ )
Col. 71, 72		Number of Variable Format Cards ( $1 \leq k \leq 10$ )

f. Selection Card

A Selection Card has seven purposes:

- (1) To indicate whether a list of the data input is desired.
- (2) To indicate whether a graph or a histogram is to be produced.
- (3) To indicate the base variable of the graph or histogram.
- (4) To indicate the number of lines of heading desired for each graph or histogram.
- (5) To indicate for graphs how many variables are to be plotted against the base variable. ( $\leq 14$ )
- (6) To indicate for graphs the choice of the type of graph.
- (7) To indicate for histograms the width of an interval.

If the Selection Card specifies that a graph is to be printed, the Heading Card is followed by a Cross-Variable Card which indicates the cross variables to be plotted against the base variable and the symbols used for each cross variable.

Col. 1-6	SELECT	(Mandatory)
Col. 7	Number of lines in a heading. Each Heading Card specifies one line of printed output. The maximum number of lines allowed in the heading is two. (See card g.)	
Col. 8	Listing of the input data.	
	0	If the listing of input data is not desired.
	1	If the listing of input data is desired.
Col. 9, 10	Number of cross variables to appear on this graph (maximum is 14).	
	00	If a histogram is desired.
Col. 11-13	Index of the base variable. On graphs, the base variable will appear on the vertical axis. On histograms, the base variable will appear on the horizontal axis.	

Col. 14-24 Form of the graph or width of interval if a histogram.

Col. 14, 15 01 If a one-page graph is desired.  
-1 If a multiple-page graph is desired, or

Col. 14-24 Width of the interval for a histogram (punch the decimal point). If too small, but  $> 0$  (Range)/34 will be used.

Col. 25-72 Blank

g. Heading Card(s)

Col. 1-72 Punch the desired heading. Each card is a line of the heading. There must be at least one Heading Card, but no more than two, per graph or histogram.

(h.) Cross-Variable Card

The Cross-Variable Card is punched as follows (for graphs only, not histograms). The cross variables specified to be crossed with one base variable will appear on one graph; the cross variables will appear on the horizontal axis.

Col. 1-6 CRSVAR (Mandatory)

Col. 7-9 Index of the 1st cross variable

Col. 10 Symbol for the 1st cross variable (see below)

Col. 11-15 Ignored

Col. 16-18 Index of the 2nd cross variable

Col. 19 Symbol for the 2nd cross variable

Col. 20-24 Ignored

...

Col. 61-63 Index of the 7th cross variable

Col. 64 Symbol for the 7th cross variable

Col. 65-69 Ignored

The symbols to be used for each cross variable must be specified. Allowable symbols are:

1., - JKLMNOPQRSTUVWXYZ\*)(= \$' +

The following symbols may not be used because they have been used to represent ties (more than one point occurring at the same coordinates):

<u>Symbol</u>	<u>No. of Points</u>	<u>Symbol</u>	<u>No. of Points</u>	<u>Symbol</u>	<u>No. of Points</u>
2	2	8	8	E	14
3	3	9	9	F	15
4	4	A	10	G	16
5	5	B	11	H	17
6	6	C	12	I	18
7	7	D	13	/	more than 18

If there are more than seven cross variables, continue punching a second card in the same manner.

Col. 1-6      CRSVAR                      (Mandatory)

Col. 7-9      Index for the 8th cross variable

Col. 10       Symbol for the 8th cross variable

Col. 11-15   Ignored  
          ...

Col. 61-63   Index for the 14th cross variable

Col. 64       Symbol for the 14th cross variable

Col. 65-69   Ignored

The maximum number of cross variables for a specified base variable is fourteen.

## REFERENCE

Dixon, W. J., and Massey, F., Introduction to Statistical Analysis, Third Edition, McGraw Hill, 1969, p. 6.



PROBLMTEST0200300028001  
(F4.0, 1X, F5.0, 1X, F5.0)

17 2.125 5.375  
32 2.375 5.125  
60 2.625 4.875  
119 2.875 4.625  
190 3.125 4.375  
299 3.375 4.125  
448 3.625 3.875  
637 3.875 3.625  
852 4.125 3.375  
1086 4.375 3.125  
1316 4.625 2.875  
1520 4.875 2.625  
1668 5.125 2.375  
1749 5.375 2.125  
1749 5.625 8.875  
1668 5.875 8.625  
1520 6.125 8.375  
1316 6.375 8.125  
1086 6.625 7.875  
952 6.875 7.625  
637 7.125 7.375  
448 7.375 7.125  
299 7.625 6.875  
190 7.875 6.625  
119 8.125 6.375  
60 8.375 6.125  
32 8.625 5.875  
17 8.875 5.625

SELECT110200101  
TEST FOR BMD05D ONE PAGE GRAPH  
CRSVAR002\*0000000300000  
FINISH

#### Problem Card

Problem Test 02  
3 original variables, p  
28 cases, n  
1 Selection Card  
1 Variable Format Card (1 in col. 72 is not shown)

#### Selection Card

1 heading line will be specified.  
Listing of data desired.  
2 cross variables to appear on the graph.  
Variable 1 is the base variable and it will appear on the vertical axis.  
One-page graph desired.

#### Heading Card

"Test for BMD05D One Page Graph" will appear as the heading for the graph.

#### Cross-Variable Card

Variable 2 (symbol \*) and variable 3 (symbol Q) will be the cross variables.

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```

PROBLEM CODE . . . . . TESTC1
NC. OF VARIABLES . . . . . 1
NC. OF CASES . . . . . 404
NC. OF SELECTION CARDS . . . . . 1
NC. OF VARIABLES ADDED . . . . . 0
NC. OF TRUNCATED CARDS . . . . . 0
NC. OF FORMAT CARDS . . . . . 1
REMAINING INPUT TAPE . . . . . YES

```

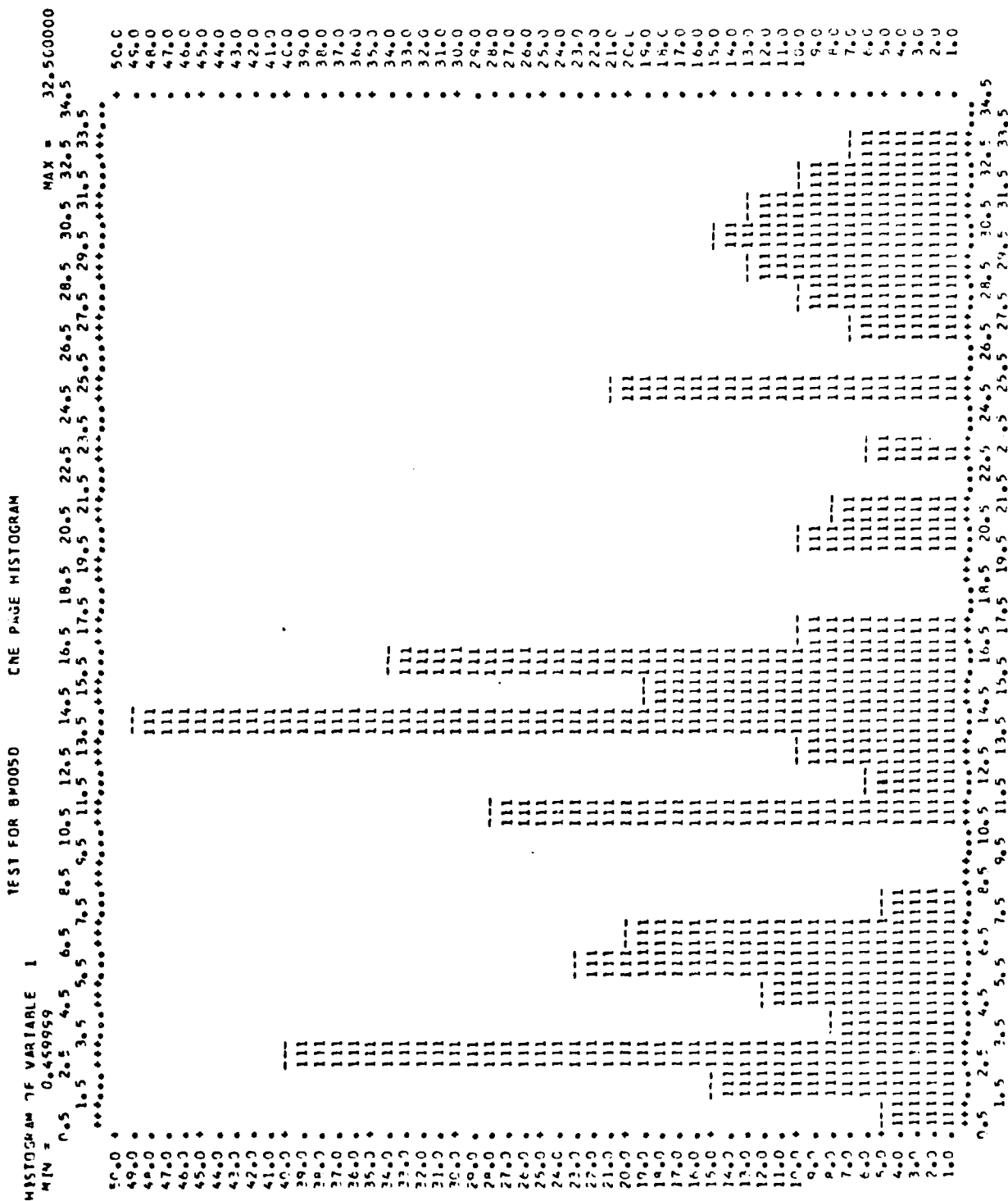
VARIABLE FORMAT CARD(S)  
(F4.0)

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HISTOGRAM OF VARIABLE 1

[illegible]

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PROBLEM CODE . . . . . TESTC2  
NO. OF VARIABLES . . . . . 3  
NO. OF CASES . . . . . 28  
NO. OF SELECTION CARDS . . . . . 1  
NO. OF VARIABLES ADDED . . . . . C  
NO. OF TRNGEN CARDS . . . . . 0  
NO. OF FORMAT CARDS . . . . . 1  
REMIIO INPUT TAPE . . . . . YES

VARIABLE FORMAT CARDIS1  
(F4.0, IX, F5.0, IX, F5.0)

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BASE VARIABLE			CROSS VARIABLES		
1	2	3	4	5	6
17.0000	2.1250	5.3750			
22.0000	2.3750	5.1250			
60.0000	2.6250	4.8750			
119.0000	2.8750	4.6250			
190.0000	3.1250	4.3750			
259.0000	3.3750	4.1250			
449.0000	3.6250	3.8750			
637.0000	3.8750	3.6250			
852.0000	4.1250	3.3750			
1036.0000	4.3750	3.1250			
1216.0000	4.6250	2.8750			
1520.0000	4.8750	2.6250			
1648.0000	5.1250	2.3750			
1745.0000	5.3750	2.1250			
1745.0000	5.6250	1.8750			
1648.0000	5.8750	1.6250			
1520.0000	6.1250	1.3750			
1316.0000	6.3750	1.1250			
1096.0000	6.6250	0.8750			
952.0000	6.8750	0.6250			
637.0000	7.1250	0.3750			
449.0000	7.3750	0.1250			
259.0000	7.6250	0.0000			
190.0000	7.8750	0.0000			
119.0000	8.1250	0.0000			
60.0000	8.3750	0.0000			
22.0000	8.6250	0.0000			
17.0000	8.8750	0.0000			

BMD13D  
t PROGRAM

1. GENERAL DESCRIPTION

- a. This program computes t-statistics and associated probability levels for the equality of the means of two groups based on pooled and separate variance estimates. An F-statistic and associated probability level for the equality of group variances is also computed. Groups are defined by means of a cut point for a category variable. Several dependent variables may be analyzed concurrently. Each problem may contain from one to twenty subproblems. Each subproblem is defined through Boolean selection of cases. Transgenerations are available and data specified as "missing" will be deleted for that variable. Paired comparison t-ratios may be obtained through transgeneration.
- b. Output from this program includes:
  - (1) F-ratio of variance
  - (2) t-value (based on pooled variance estimate)
  - (3) t-value (based on separate variance estimate)
  - (4) Two-tailed probability levels for each t and for the F
  - (5) Means
  - (6) Standard deviations
  - (7) Standard error of the means
  - (8) Number of observations included in computation of 5-7 above
  - (9) Optional output of data input
- c. Limitations per problem
  - (1) p, number of original variables ( $1 \leq p \leq 199$ )  
(Note: only variables 1-100 can be analyzed; the remaining variables are available for transgeneration.)
  - (2) n, number of cases ( $1 \leq n \leq 32000$ )
  - (3) q, number of variables added to the original set after transgeneration ( $-198 \leq q \leq 99$ )
  - (4) p+q, total number of variables output ( $1 \leq p+q \leq 100$ )
  - (5) m, number of Transgeneration Cards ( $0 \leq m \leq 100$ )
  - (6) D, number of Missing Value Cards ( $0 \leq D \leq 100$ )
  - (7) S, number of subproblems ( $1 \leq S \leq 20$ )
  - (8) b, number of Case Selection Cards per subproblem ( $1 \leq b \leq 2$ )
  - (9) K, number of Variable Format Cards ( $1 \leq K \leq 10$ )
  - (10) t, alternate input tape cannot be equal to 1

- d. Estimation of running time and output pages per problem:

Number of seconds =  $2 + \frac{1}{10}(p+q)S$  (for IBM 7094)

(Add  $(\frac{1}{6}(p+q)S)$  if YES in Col. 39-41 of Problem Card)

Number of pages =  $4 + \frac{1}{8}(p+q)S$

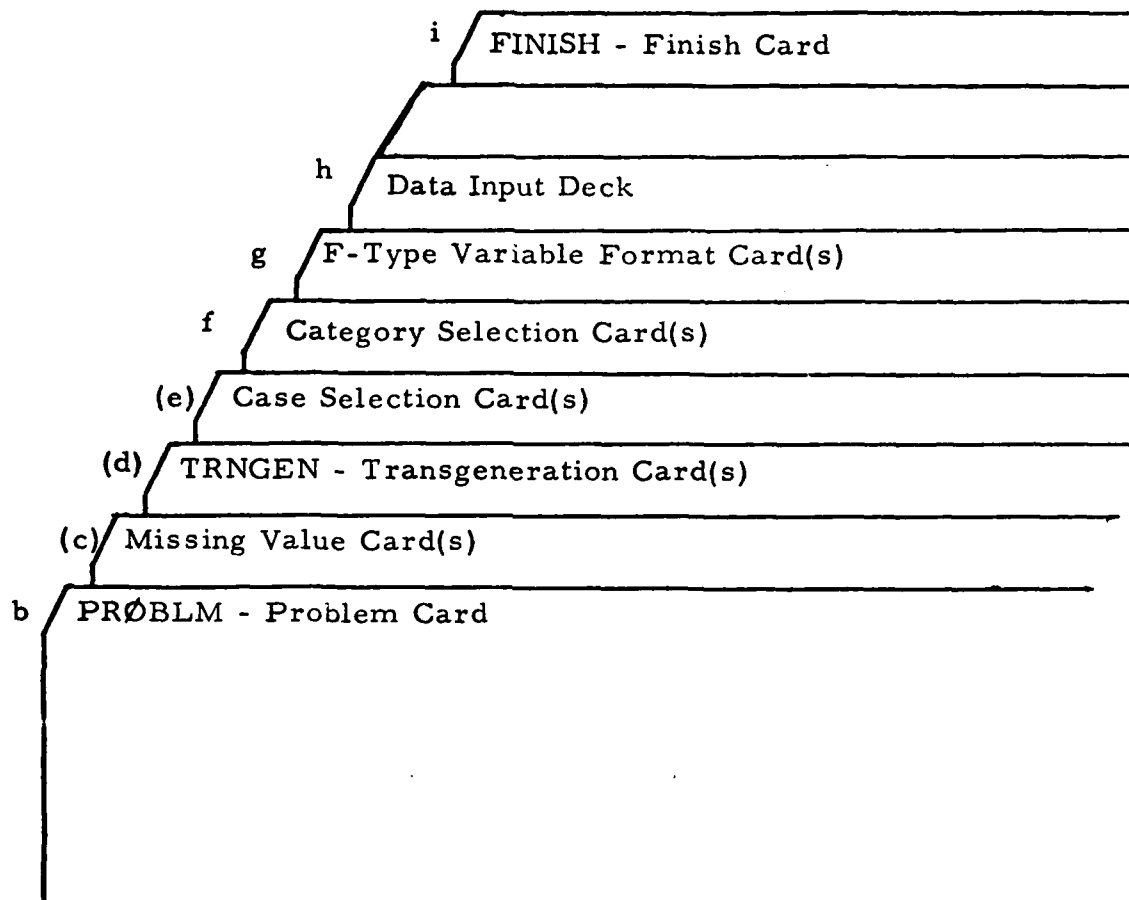
- e. The program allows standard transgeneration. Codes 1-5, 7-17, 20-24, 40, and 41 of the transgeneration list may be used. Variables transgenerated from variables with missing values will be considered missing.

## 2. ORDER OF CARDS IN DECK

Cards indicated by letters enclosed in parentheses are optional. All other cards must be included in the order shown.

- a. System Cards [Introduction, IV]
- b. Problem Card
- (c.) Missing Value Card(s)
- (d.) Standard Transgeneration Card(s) [Introduction, III-B]
- (e.) Case Selection Card(s)
- f. Category Selection Card(s)
- g. Variable Format Card(s) [Introduction, II-C]
- h. DATA INPUT Cards if data are on cards [Introduction, II]  
(Place data input deck here if data input is from cards)  
...  
Repeat b. through h. as desired  
...  
i. Finish Card [Introduction, III]

Deck Set-up:



3. CARD PREPARATION

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction

b. Problem Card

Col.	1-6	PRØBLM
	7-12	Alphanumeric problem code
	13-17	Number of cases ( $1 \leq n \leq 32000$ )
	18-20	Number of original variables ( $1 \leq p \leq 199$ ) (Note: only variables 1-100 can be analyzed; the remaining variables are available for transgeneration.)
	21-23	Number of Transgeneration Cards ( $0 \leq m \leq 100$ )
	24-27	Number of variables added to or subtracted from the original set by transgeneration ( $-198 \leq q \leq 99$ )
	28-30	Number of Missing Value Cards ( $0 \leq D \leq 100$ )
	31-33	Number of subproblems ( $1 \leq S \leq 20$ ) (This option must be used if the data are to be divided into one or more subsamples. If these columns are left blank, the program will assume that there is only one subproblem and that all of the cases are to be included in that subproblem.)
	34-36	Tape for data output (must not be 5 or 6)
	37, 38	Number of cards per case (If a tape number (Col. 34-36) and the number of cards per case (Col. 37, 38) are specified, the program will copy the input data on the specified logical tape. Since the data is copied as card images, successive problems may read the data from this tape with different variable formats.)
	39-41	YES if probabilities are to be computed
	69, 70	00 data input from cards T data input from logical tape T ( $T \neq 1, 6$ )
	71, 72	Number of Variable Format Cards ( $1 \leq K \leq 10$ )

(c.) Missing Value Card(s)

Col.	1-4	Variable index (codes apply only to this variable) 00 if same codes apply to all variables. In this case, only one Missing Value Card is prepared.
	5-8	Number of missing value codes ( $1 \leq C \leq 10$ )
	9-14	First missing value code
	15-20	Second missing value code
	⋮	
	63-68	Tenth missing value code

(c.) Case Selection Card(s)

Each subproblem is defined by a Boolean selection rule for selecting cases to be analyzed. This rule may be simple (one relationship), e. g., if variable 2 is not equal to variable 100 then accept the case) or may be complex (two through eight relationships, e. g., accept the case for analysis if variable 10 is greater than or equal to 100 and if variable 10 is less than 200). If the rule has more than four relationships, two cards are needed and the first card must contain the first four relationships. The first relationship for each subproblem must begin on a new card and the last operation must be \*\* to indicate the end of the selection rule for that subproblem.

According to the rule, the entire Boolean expression is either true or false for the case being tested. It is examined from left to right. If an OR is encountered and the expression preceding the OR is true, the case will be included in the subproblem. If the expression preceding the OR is false, the scan begins again with the expression following the OR.

Example: If the Problem Card had specified two subproblems, the two Case Selection Cards could be:

```
(V(002)NEV(100))**  
(V(010)GE100.00)AN(V(010)LT200.00)**
```

The first subproblem would perform t-tests using cases which had the value of variable 2 not equal to the value of variable 100. The second subproblem would perform t-tests using cases for which the tenth variable was 100 or greater but less than 200.

One set of Case Selection Cards must be included for each subproblem specified in Col. 31-33 of the Problem Card. If these columns were left blank, do not include any Case Selection Cards.

Col.	1-3	(V(
	4-6	Variable index for the first relationship
	7	)
	8, 9	Relationship
		GT (greater than)
		LT (less than)
		GE (greater than or equal to)
		LE (less than or equal to)
		EQ (equal to)
		NE (not equal to)

[	10, 11 12, 14 15	V( Variable index of variable to be related to the preceding variable )
	or	
[	10-15 16 17, 18	Constant to be related to the preceding variable ) Operation

AN (and)    The following relationship must also be true in order for the case to be included in this subproblem.

OR            The case will be included if either the preceding or a following relationship is true.

\*\*            This terminates the set of Boolean relationships for this subproblem.

f.      Category Selection Card(s)

Col.	1-3 4-9 10-12 13-18 : : 64-66 67-72	Variable index of category variable for first subproblem Cut point for first subproblem Variable index of category variable for second subproblem Cut point for second subproblem  Variable index of category variable for eighth subproblem Cut point for eighth subproblem
------	--	--

... continue, using three cards if necessary.

The observations for a case not specified as missing are included in the X category if the value of the variable specified on the Category Selection Cards is greater than or equal to the specified value; if the value is less, the case will be included in the Y category. If the category variable is missing, the case will be excluded from subproblems using that categorization.

#### 4. COMPUTATIONAL PROCEDURE

P variables for the first case are read, missing values are replaced by -0 and transgenerations are performed. In transgeneration, if  $X_i$  or  $X_j = -0$ , then  $X_k = -0$ . If a case meets the specifications for a subproblem, its observations will be included in the calculations for that subproblem. A case may be included in more than one subproblem. Each subproblem is divided into two groups: an X and a Y category.

For each subproblem, the number of non-missing observations, the mean, standard deviation, and standard error are computed for each variable of each category. The t-values, F-value, and corresponding probability level for between category comparison are computed for each variable.

**Step 1.**  $X_{ijkl}$ ,  $i = 1, 2, \dots, n; n \leq 32000$   
 $j = 1, 2, \dots, (p+q); (p+q) \leq 100$   
 $k = 1, 2; 1 = X \text{ category}, 2 = Y \text{ category}$   
 $l = 1, 2, \dots, S; S \leq 20$

Step 2. Mean  $\bar{X}_{jkl} = \frac{1}{n_{jkl}} \sum_i x_{ijkl}$

$$\text{Variance } s_{jkl}^2 = \frac{1}{n_{jkl} - 1} \left( \sum_i X_{ijkl}^2 - \frac{(\sum_i X_{ijkl})^2}{n_{jkl}} \right)$$

Standard deviation  $s_{jkl} = \sqrt{s_{jkl}^2}$

$$\text{Standard error (of mean) } SE_{jkl} = \frac{s_{jkl}}{\sqrt{n_{jkl}}}$$

$$F_{j\ell} = \frac{s_{j1\ell}^2}{s_{j2\ell}^2} \quad \text{if} \quad (s_{j1\ell}^2 \geq s_{j2\ell}^2)$$

$$\text{or } \frac{s_{j2l}^2}{s_{j1l}^2} \quad \text{if} \quad (s_{j1l}^2 < s_{j2l}^2)$$

Degrees of freedom based on pooled variance estimate:

$$D_p = \max(n_{j1l} - 1, 0) + \max(n_{j2l} - 1, 0).$$

t based on pooled variance estimate:

$$t_p = \frac{\bar{X}_{j1l} - \bar{X}_{j2l}}{\sqrt{\left(\frac{1}{n_{j1l}} + \frac{1}{n_{j2l}}\right) \left[ s_{j1l}^2 (n_{j1l} - 1) + s_{j2l}^2 (n_{j2l} - 1) \right] / D_p}}$$

t based on separate variance estimate:

$$t_s = \frac{\bar{X}_{j1l} - \bar{X}_{j2l}}{\sqrt{\frac{s_{j1l}^2}{n_{j1l}} + \frac{s_{j2l}^2}{n_{j2l}}}}$$

Degrees of freedom based on separate variance estimate:

$$D_s = \frac{1}{\frac{1}{n_{j1l} - 1} \left( \frac{(SE_{j1l})^2}{(SE_{j1l})^2 + (SE_{j2l})^2} \right)^2 + \frac{1}{n_{j2l} - 1} \left( \frac{(SE_{j2l})^2}{(SE_{j1l})^2 + (SE_{j2l})^2} \right)^2}$$

## 5. REFERENCE

Bennett, Carl A. and Franklin, Norman L., Statistical Analysis in Chemistry and the Chemical Industry, Wiley, 1954.

This program was written by Daniel Frumkes, a member of the staff of the Health Sciences Computing Facility, UCLA.

PROBLEM	TEST	8	10	24	24	2	1	YES
4	3	9	10	11				
10	2	4	9					
TRNGEN	11 1	1						
TRNGEN	12 2	1						
TRNGEN	13 3	3						
TRNGEN	14 4	4						
TRNGEN	15 5	5						
TRNGEN	16 5	6						
TRNGEN	17 7	2						
TRNGEN	18 8	2	1					
TRNGEN	19 9	2	2					
TRNGEN	20 10	2	2					
TRNGEN	21 11	1	2					
TRNGEN	22 12	1	2					
TRNGEN	23 13	1	2					
TRNGEN	24 14	6	5					
TRNGEN	25 15	2	1.5					
TRNGEN	26 16	1	4					
TRNGEN	27 17	6						
TRNGEN	28 20	7						
TRNGEN	29 21	7						
TRNGEN	30 22	8						
TRNGEN	31 23	1	2					
TRNGEN	32 24	4	2					
TRNGEN	33 40	1	2	3	1	4	16	
TRNGEN	34 41	10	2					
(V(C02)EQ1.0000)OR(V(002)EQ2.0C00)**								
2	1.5	1	5					
(10F2.0)								
1	1	5	9	1	1	1	1	1
60	2	10	2	2	2	2	2	2
30	2	7	11	3	3	3	3	3
10	4	12	4	4	4	4	4	4
20	1	9	13	5	5	5	5	5
40	11	14	6	6	6	6	6	6
15	11	15	7	7	7	7	7	7
30	21	16	8	8	8	8	8	8
FINISH								

1

### Problem Card

Title: "TEST"

8 cases  
 10 variables input  
 24 Transgeneration Cards  
 24 variables added by trans-  
 generation  
 2 Missing Value Cards  
 1 subproblem  
 data input from cards  
 probabilities to be computed  
 1 Variable Format Card

### Missing Value Cards

Variable 4, missing values are  
 9-11.

Variable 10, missing values are  
 4, 9.

### Transgeneration Cards

Transgeneration codes available  
 1-17, 20-24, 40-41.

### Subproblem Card

If Var. 2 = 1 or = 2, include the  
 the case; omit otherwise.

### Category Selection Card

Category X contains all cases  
 such that Var. 2  $\geq$  1.5.

Category Y contains all other  
 cases.

### Variable Format Card

F-type format, specifies each of  
 10 variables read in 2-column  
 fields.

AMD130 - T PROGRAM - REVISED OCTOBER 1, 1972  
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PROBLEM TEST  
NUMBER OF CASES..... 8 NO. OF SUB-PROBLEMS.. 1  
NUMBER OF PUNCHED VARIABLES.. 10 TAPE TO WRITE..... 3  
NUMBER OF TRANSEGENERATIONS.. 24 INPUT TAPE NUMBER.. 3  
NUMBER OF VARIABLES ADDED..... 24 NUMBER OF VARIABLE  
NUMBER OF MISVAL CARDS..... 2 FORMAT CARDS..... 1

MISSING NUMBER OF  
VARIABLE VALUES VALUE 1 VALUE 2 VALUE 3 VALUE 4 VALUE 5 VALUE 6 VALUE 7 VALUE 8 VALUE 9 VALUE 10

4 3 9.00 10.00 11.00  
10 2 4.00 9.00

NEW VAR.	CODE	OLD VAR.	B VAR. OR CONST.	NUMBER OF CONSTANTS	TYPE 40 CONSTANTS
11	1	1	-C.0		
12	2	1	-C.0		
13	3	3	-C.0		
14	4	4	-C.0		
15	5	5	-C.0		
16	5	6	-C.0		
17	7	2	-C.0		
18	8	2	1.00		
19	9	2	2.00		
20	10	2	2.00		
21	11	1	2.00		
22	12	1	2.00		
23	13	1	2.00		
24	14	5	5.00		
25	15	2	1.50		
26	16	1	4.00		
27	17	6	-C.0		
28	20	7	-C.0		
29	21	7	-C.0		
30	22	8	-C.0		
31	23	1	2.00		
32	24	9	2.00		
33	40	1	2.00	3	1.00 4.00 16.00
34	41	10	2.00		

CASE WILL BE INCLUDED IN SUB-PROBLEM 1 IFVI 2) EQ 1.0000 OR VI 2) EQ 2.0003 \*\* VI

VARIABLE FORMAT  
(10F2.0)

SUB-PROBLEM NUMBER 1 CONTAINS 7 CASES				POOLED VARIANCE ESTIMATE				SEPARATE VARIANCE ESTIMATE			
VARIABLE INDEX	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	F VALUE	P VALUE	T VALUE	DEGREES OF FREEDOM	T VALUE	DEGREES OF FREEDOM	P VALUE
1	X 3	40.0000	17.320	10.000	1.15	0.051	1.65	5	0.159	1.63	4.25 0.170
	Y 4	19.0000	16.145	8.073							
2	X 3	2.0000	0.0	0.0	0.0	1.000	0.0	5	1.000	0.0	0.0 1.000
	Y 4	1.0000	0.0	0.0							
3	X 3	8.3333	3.215	1.856	1.49	0.709	-0.19	5	0.857	-0.18	3.86 0.866
	Y 4	6.7500	2.630	1.315							
4	X 1	16.0000	0.0	0.0	0.0	1.000	1.73	2	0.225	3.46	2.00 0.074
	Y 3	14.0000	1.000	0.577							
5	X 3	3.3333	3.0	1.856	0.0	1.000	0.709	5	0.709	0.0	3.86 0.866
	Y 4	2.630	2.630	1.315							
6	X 3	0.0	0.0	0.0	0.0	1.000	-0.85	5	0.437	-1.00	3.00 0.391
	Y 4	0.5000	1.000	0.500							
7	X 3	0.0	0.0	0.0	0.0	1.000	0.0	5	1.000	0.0	0.0 1.000
	Y 4	0.0	0.0	0.0							

NUMBER OF CASES NOT INCLUDED IN DESIGNATED SUB-PROBLEMS= 1  
 NUMBER OF INSTANCES IN WHICH TRANSGENERATION RESTRICTIONS WERE VIOLATED= 0

BMD01R  
SIMPLE LINEAR REGRESSION  
(ONE-WAY ANALYSIS OF COVARIANCE)

1. GENERAL DESCRIPTION

- a. This program performs simple linear regression analysis on single or combined treatment groups with unequal sample sizes. (The words "treatment groups" are used here to describe categories.) The "within" cross-products sums and coefficients are computed; thus, analysis-of-covariance information is also provided in the output.
- b. Output from this program includes:
  - (1) Sum of squares and products for treatment means, within, and total with degrees of freedom
  - (2) Deviations about regression for within, total, and adjusted means with degrees of freedom
  - (3) Regression coefficients for treatment means, within, and total
  - (4) F ratios for treatment means, adjusted means, and within coefficients with degrees of freedom
  - (5) Bioassay information (optional)
- c. Limitations per problem:
  - (1)  $t$ , number of treatment groups ( $1 \leq t \leq 999$ )
  - (2)  $n_i$ , number of cases in the  $i^{\text{th}}$  treatment group ( $1 \leq n_i \leq 999$ )
  - (3)  $s$ , number of subset specifications ( $0 \leq s \leq 500$ )
  - (4)  $c$ , number of combinations of subsets ( $0 \leq c \leq 99$ )
  - (5)  $k$ , number of Variable Format Cards ( $1 \leq k \leq 10$ )
- d. Estimation of running time and output pages per problem:  
  
Number of seconds =  $25 + s + c$  (for IBM 7094)  
Number of pages =  $10 s + c$

- e. This program allows transgeneration of either the dependent variable or independent variable or of both. Codes 1-10 from the transgeneration list may be used. (See Introduction, Section III-B, for Special Transgeneration Cards.)
- f. Subsets and combinations of subsets can be selected from the input data as illustrated in the following example:

X = Pre-treatment measurement (or independent variable)  
Y = Post-treatment measurement (or dependent variable)

Group A	Group B	Group C	Group D	etc.
$Y_1 X_1$	$Y_1 X_1$	$Y_1 X_1$	$Y_1 X_1$	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
$Y_a X_a$	$Y_b X_b$	$Y_c X_c$	$Y_d X_d$	.

#### Subset Specification

Subset Number	Group(s)
1	A
2	B, C, D
3	E, F, G
4	G
.	.
.	.
.	.

An analysis-of-variance table can be computed for each subset or one table for the combined subsets. If any additional tables are desired for combinations of these subsets, they are specified as follows:

#### Combination of Subsets

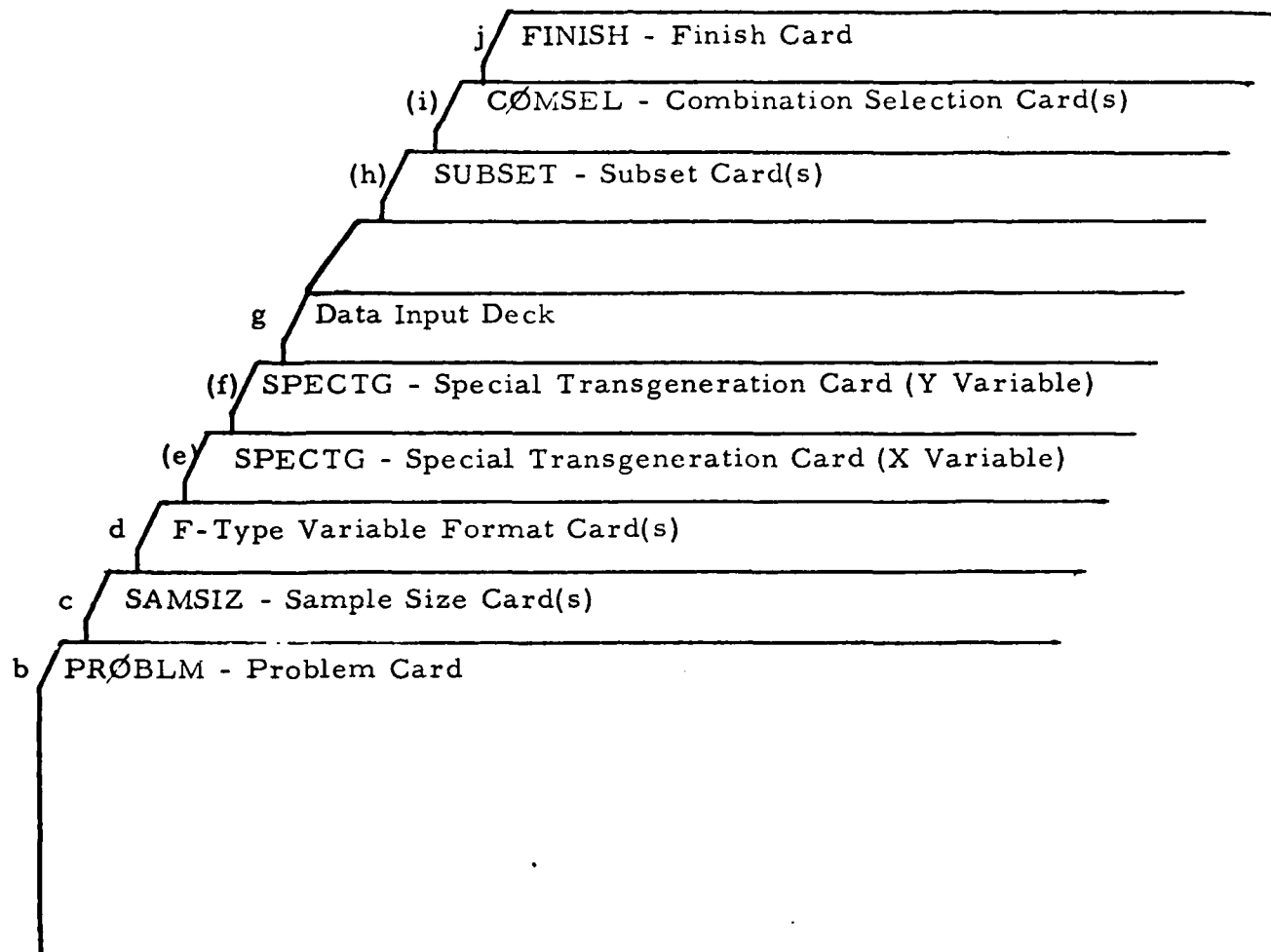
Combination Number	Subsets Included
1	1, 2, 3
2	1, 4
.	.
.	.
.	.
.	.

## 2. ORDER OF CARDS IN JOB DECK

Cards indicated by letters enclosed in parentheses are optional.  
All other cards must be included in the order shown.

- a. System Cards [Introduction, IV]
- b. Problem Card
- c. Sample Size Card(s)
- d. F-type Variable Format Card(s) [Introduction, III-C]
- (e.) Special Transgeneration Card [Introduction, III-B]  
(for independent variable)
- (f.) Special Transgeneration Card [Introduction, III-B]  
(for dependent variable)
- g. DATA INPUT Cards [Introduction, II]  
(Place data input deck here  
if data input is from cards.)
- (h.) Subset Card(s)
- (i.) Combination Selection Card(s)  
...  
Repeat b. through (i.) as desired.  
...  
j. Finish Card [Introduction, III]

Deck Set-up:



### 3. CARD PREPARATION (SPECIFIC FOR THIS PROGRAM)

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction.

#### a. Problem Card (One Problem Card for each problem)

Col. 1-6      PRØBLM                      (Mandatory)

Col. 7-12     Alphanumeric job code

Col. 13-15    Number of treatment groups ( $1 \leq t \leq 999$ )

Col. 16       0    No transgeneration  
              1    Transgeneration of independent variable only  
              2    Transgeneration of dependent variable only  
              3    Transgeneration of both independent and  
                     dependent variables

Note: When transgeneration is specified, it applies to all treatment groups.

Col. 17-19    Number of subsets specified ( $0 \leq s \leq 500$ )

Col. 20, 21    Number of combination selections ( $0 \leq c \leq 99$ )

Col. 22       0    If a single table based on all subsets combined  
                     is desired. This table will be of no value if  
                     subsets have groups in common, since some  
                     groups will be included more than once.  
              1    If one table is desired for each subset separately,  
                     in addition to the above table.

Col. 23-28    Value of Student's t if bioassay information is desired;  
                     otherwise leave blank. (Key punch decimal point.)

Col. 29-68    Blank

Col. 69, 70    B    If data input is from logical BCD tape B  
                     (B  $\neq$  6).

Col. 71, 72    Number of Variable Format Card(s) ( $1 \leq k \leq 10$ )

b. Sample Size Card(s)

Col. 1-6	SAMSIZ	(Mandatory)
Col. 7-9	$n_1$ , number of cases for treatment group 1	
Col. 10-12	$n_2$ , number of cases for treatment group 2	
...		
Col. 70-72	$n_{22}$ , number of cases for treatment group 22	

If there are more than 22 treatment groups, continue keypunching a second, a third card, etc. in the same manner.

Col. 1-6	SAMSIZ	(Mandatory)
Col. 7-9	$n_{23}$ , number of cases for treatment group 23	
Col. 10-12	$n_{24}$ , number of cases for treatment group 24	
...		

g. DATA INPUT Cards (See Introduction, Section II)

The form of the data input is illustrated in the following example:

Treatment  
Group

1	$Y_{11}, X_{11}; Y_{12}, X_{12}; \dots; Y_{1n_1}, X_{1n_1}$
2	$Y_{21}, X_{21}; Y_{22}, X_{22}; \dots; Y_{2n_2}, X_{2n_2}$
...	$\dots; \dots; \dots; \dots$
t	$Y_{t1}, X_{t1}; Y_{t2}, X_{t2}; \dots; Y_{tn_t}, X_{tn_t}$

Begin a new card with each treatment group.

(h.) Subset Card(s)

Specifications for groups to be included in various subsets are indicated in the following example.

Col. 1-6	SUBSET	(Mandatory)
Col. 7-9	002	} Subset 1 includes groups 2, 3, 4, 5
Col. 10-12	005	
Col. 13-15	010	} Subset 2 includes groups 10, 11, 12
Col. 16-18	012	
Col. 19-21	006	} Subset 3 includes group 6
Col. 22-24	006	

The punched card would be SUBSET002005010012006006

If there are more than 11 subset specifications, continue key-punching a second, a third card, etc. in the same manner. The first six columns must be keypunched SUBSET.

(i.) Combination Selection Card(s)

This card allows the user to combine the subsets previously specified.

Col. 1-6	CØMSEL	(Mandatory)
Col. 7, 8	Number of subsets in the combination ( $\leq 21$ )	
Col. 9-11	Number of the 1st subset	
Col. 12-14	Number of the 2nd subset	
...	...	
Col. 69-71	Number of the 21st subset	

The maximum number of subsets in a combination is 21. The subset numbers must be keypunched in ascending order. The number of subsets in any combination must be less than or equal to the total number of subsets specified. Each Combination Selection Card is independent, so the same or different subset numbers may be keypunched from card to card depending on the user's interests.

#### 4. COMPUTATIONAL PROCEDURE

$$\text{Model: } Y_{ij} = \mu + \tau_i + \beta (X_{ij} - \bar{X}) + \epsilon_{ij}$$

where  $i = 1, 2, \dots, t$  (treatment groups)  
and  $j = 1, 2, \dots, n_i$  (cases for group  $i$ )

The following computations are performed for each analysis-of-covariance table. A table is computed for all treatment groups or each subset or each combination of subsets, depending on the user's specifications on the Problem Card.

Step 1. Sum of squares and products for total

$XX_t$  = total sum of squares for X

$$= \sum_{i=1}^t \sum_{j=1}^{n_i} X_{ij}^2 - \frac{\left( \sum_{i=1}^t \sum_{j=1}^{n_i} X_{ij} \right)^2}{\sum_{i=1}^t n_i}$$

$XY_t$  = total sum of products for X and Y

$$= \sum_i \sum_j X_{ij} Y_{ij} - \frac{\left( \sum_i \sum_j X_{ij} \right) \left( \sum_i \sum_j Y_{ij} \right)}{\sum_i n_i}$$

$YY_t$  = total sum of squares for Y

$$= \sum_i \sum_j Y_{ij}^2 - \frac{\left( \sum_i \sum_j Y_{ij} \right)^2}{\sum_i n_i}$$

Step 2. Sum of squares and products for (treatment) means

$XX_m$  = treatment sum of squares for X

$$= \sum_i \frac{\left( \sum_j x_{ij} \right)^2}{n_i} - \frac{\left( \sum_i \sum_j x_{ij} \right)^2}{\sum_i n_i}$$

$XY_m$  = treatment sum of products for X and Y

$$= \sum_i \frac{\left( \sum_j x_{ij} \right) \left( \sum_j y_{ij} \right)}{n_i} - \frac{\left( \sum_i \sum_j x_{ij} \right) \left( \sum_i \sum_j y_{ij} \right)}{\sum_i n_i}$$

$YY_m$  = treatment sum of squares for Y

$$= \sum_i \frac{\left( \sum_j y_{ij} \right)^2}{n_i} - \frac{\left( \sum_i \sum_j y_{ij} \right)^2}{\sum_i n_i}$$

Step 3. Sum of squares and products for within

$XX_w$  = within sum of squares for X

$$= XX_t - XX_m$$

$XY_w$  = within sum of products for X and Y

$$= XY_t - XY_m$$

$YY_w$  = within sum of squares for Y

$$= YY_t - YY_m$$

Step 4. Deviations about regression

$$\text{Within} = YY_w - (XY_w)^2 / XX_w = SS_w$$

$$\text{Total} = YY_t - (XY_t)^2 / XX_t = SS_t$$

$$\text{Difference*} = YY_m - (XY_m)^2 / XX_m + (XY_w)^2 / XX_w = SS_d$$

Step 5. Regression coefficients

$$\text{Means} = XY_m / XX_m = b_m$$

$$\text{Within} = XY_w / XX_w = b_w$$

$$\text{Total} = XY_t / XX_t = b_t$$

Step 6. F ratios

$$\text{Let } N = \sum_{i=1}^t n_i$$

$H_0$ : No difference among treatment means for X  
 $F = XX_m / (t-1) \div XX_w / (N-t)$

$H_0$ : No difference among treatment means for Y  
 $F = YY_m / (t-1) \div YY_w / (N-t)$

$H_0$ : No difference among treatment means for Y after adjusting by the regression on X  
 $F = SS_d / (t-1) \div SS_w / (N-t-1)$

$H_0$ : Within regression coefficient = 0  
 $F = (XY_w)^2 / XX_w \div SS_w / (N-t-1)$

\*For testing among means

Step 7. Bioassay information

The following computations are printed if the user specifies a t-value in Columns 23-28 of the Problem Card.

$$\text{Lambda} \quad \lambda = \frac{\sqrt{SS_t / (N-2)}}{b_t}$$

Standard Error of  $\lambda$

$$SE(\lambda) = \lambda \left\{ 1/(2N-3) + 1 / \left[ \frac{(XY_t)^2 (N-2)}{(XX_t)(SS_t)} - (\text{Student's } t)^2 \right] \right\}^{1/2}$$

Note: Student's  $t$  is usually taken at .95 level (d.f. =  $N-2$ ).  
For  $N$  large,  $t \approx 2$ .

Standard Error of log ratio of potencies

$$SE(p) = 2 \lambda / \sqrt{N}$$

Estimate of required sample size for assay

$$E(N) = 4 [\lambda + t SE(\lambda)]^2 / SE(p)^2$$

5. REFERENCES

Dixon, Wilfrid J., and Massey, Frank J., Introduction to Statistical Analysis, McGraw-Hill, 1969; Chapter 12. Third Edition.

Finney, D. J., Experimental Design and Its Statistical Basis, The University of Chicago Press, 1955.

Ostle, Bernard, Statistics in Research, The Iowa State College Press, 1954; Chapter 13.

PROBLMTEST01 150 5 212.0000  
 SAMSIZ006006006006C12004004004006006006004J02005009  
 (12F6.0)

165	30	170	27	130	20	156	21	167	33	151	
180	24	169	31	171	20	161	26	180	20	170	
156	34	189	32	138	35	190	35	160	30	172	
201	41	173	32	200	30	193	35	142	28	189	
110	60	135	60	120	60	120	62	140	62	130	
135	62	150	64	145	64	170	70	185	70	160	
10	3	8	2	8	1	11	2				
12	4	12	3	10	3	13	5				
6	1	5	2	8	3	7	1				
136	149	154	164	111	64	96	90	76	218	85	199
138	297	174	393	131	299	207	279	66	389	85	360
231	781	280	766	219	675	261	659	263	919	272	979
45	00	46	00	49	00	44	00				
35	00	33	00								
34	00	34	00	35	00	34	00	33	00		
41	00	41	00	44	00	43	00	41	00	42	00
44	00	41	00	41	00						

SURSET001004005005CC6CC8009C11012015

COMSEL 2 1 2

COMSEL 4 2 3 4 5

FINISH

### Problem Card

#### Problem Test 01

15 groups, t

no transgeneration

5 subsets

2 combination selections

One table is desired for each subset separately.

Student's t value of 2.0000 specified for bioassay information.

#### Sample Size Card

n <sub>1</sub>	6	n <sub>7</sub>	4
n <sub>2</sub>	6	n <sub>8</sub>	4
n <sub>3</sub>	6	n <sub>9</sub>	6
n <sub>4</sub>	6	n <sub>10</sub>	6
n <sub>5</sub>	12	n <sub>11</sub>	6
n <sub>6</sub>	4	n <sub>12</sub>	4
		n <sub>13</sub>	2
		n <sub>14</sub>	5
		n <sub>15</sub>	9

### Subset Card

Subset 0 (automatic) includes all groups.

Subset 1 includes groups 1, 2, 3, 4.

Subset 2 includes only group 5.

Subset 3 includes groups 6, 7, 8.

Subset 4 includes groups 9, 10, 11.

Subset 5 includes groups 12, 13, 14, 15.

#### Combination Selection Cards

Combination of subsets 1, 2 includes groups 1-5.

Combination of subsets 2, 3, 4, 5 includes groups 5-15.

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PROBLEM CODE TEST01  
NO. OF GROUPS 15  
TRANSGENERATION 0  
NO. OF VAR. FMT. CARDS(15) 1  
TYPE VARIABLE FORMAT IS (12F6.0)

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# ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES FREEDOM	SUMS OF SQUARES AND PRODUCTS		DEVIATION ABOUT REGRESSION	
		SS	XY	SS	DF
MEANS	14	3764521.0000	778368.1875	448057.0000	
WITHIN	71	114052.0000	-148.0000	32703.8047	70
TOTAL	85	3818573.0000	778220.1875	322160.8125	84
DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS.....				289457.0000	14
					20675.5000

## REGRESSION COEFFICIENTS

MEANS 0.2101  
WITHIN -0.0013  
TOTAL 0.2098

## BIOASSAY INFORMATION

LAMBDA= 303.8752

CONFIDENCE LIMIT FOR LAMBDA= 54.9553

## F RATIOS FOR

X MEANS 164.7250 ( 14, 71)  
Y MEANS 69.4805 ( 14, 71)  
Y\* MEANS 44.2543 ( 14, 70)  
B WITHIN 0.0004 ( 1, 70)

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SUBSET SPECIFICATION

NO START END  
1 1 4

ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SS	SP	XY	YY	DEVIATION ABOUT REGRESSION	DF	MEAN SQ
MEANS	9	365.4531	451.1875	2163.1250	*			
WITHIN	20	361.5078	496.8750	5937.8750	*	5256.9614	19	276.5757
TOTAL	23	726.9609	948.0625	8101.0000	*	6864.5859	22	
DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS.....*						1609.6445	3	536.5481

REGRESSION COEFFICIENTS

MEANS 1.2346  
WITHIN 1.3745  
TOTAL 1.3041

F RATIOS FOR	DF
X MEANS	6.7354 ( 3, 20)
Y MEANS	2.4266 ( 3, 20)
Y* MEANS	1.9400 ( 3, 19)
B WITHIN	2.4652 ( 1, 19)

BIOASSAY INFORMATION

LAMDA= 13.5447

THE APPROXIMATION USED IN THIS PROGRAM IS INAPPROPRIATE FOR THIS PROBLEM.  
THE CONFIDENCE LEVEL FOR LAMDA IS NOT COMPUTED.

AD-A128 791

IMPLEMENTATION PLAN FOR DATA COLLECTION REDUCTION AND  
ANALYSIS IN SUPPORT (U) COMPUTER SCIENCES CORP FALLS  
CHURCH VA MAY 76 F23613-74-C-0014

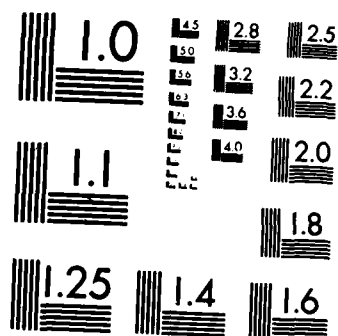
4/4

UNCLASSIFIED

F/G 9/2

NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A



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SUBSET SPECIFICATION

NO START END  
3 6 8

ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUMS OF SQUARES AND PRODUCTS			DEVIATION ABOUT REGRESSION		
		XX	XY	YY	Yoye	DF	MEAN SQ Yoye
MEANS	2	9.5000	20.7500	55.1667	*		
WITHIN	9	7.5000	6.2500	16.5000	*	11.2917	1.4115
TOTAL	11	17.0000	27.0000	71.6667	*	28.7844	10
DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS.....						17.4927	2
							8.7464

REGRESSION COEFFICIENTS

MEANS 2.1842  
WITHIN 0.8333  
TOTAL 1.5882

F RATIOS FOR

K MEANS	5.7000 ( 2, 9)
Y MEANS	15.0455 ( 2, 9)
Y* MEANS	6.1967 ( 2, 8)
D WITHIN	3.6900 ( 1, 8)

BIOASSAY INFORMATION

LAMBDA= 1.0682

CONFIDENCE LIMIT FOR LAMBDA= 0.4005

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SUBSET SPECIFICATION

NO START END

4 9 11

ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES FREEDOM	SUMS OF SQUARES AND PRODUCTS			DEVIATION ABOUT REGRESSION		
		XX	XY	YY	Yyy	DF	MEAN SQ Yyy
MEANS	2	1341315.0000	308411.0000	72194.2500			
WITHIN	15	113512.0000	-1514.0000	21450.2500	21430.0547	14	1530.7180
TOTAL	17	1454831.0000	306897.0000	93644.5000	28904.5312	16	
DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS					7474.4766	2	3737.2383

REGRESSION COEFFICIENTS

MEANS 0.2299  
WITHIN -0.0133  
TOTAL 0.2110

BIOASSAY INFORMATION

LAMBDA= 201.4851

CONFIDENCE LIMIT FOR LAMBDA= 50.2420

F RATIOS FOR

X MEANS 80.6241 ( 2, 15)  
Y MEANS 25.2424 ( 2, 15)  
Y\* MEANS 2.4415 ( 2, 14)  
B WITHIN 0.0132 ( 1, 14)

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SUBSET SPECIFICATION

NO START END  
5 12 15

ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES FREEDOM	SUMS OF SQUARES AND PRODUCTS	DEVIATION ABOUT REGRESSION
		XX XY YY	YY* DF MEAN SQ YY*
MEANS	3	0.0 0.0 432.0000 *	
WITHIN	16	0.0 0.0 32.0000 *	32.0000 15 2.1333
TOTAL	19	0.0 0.0 464.0000 *	464.0000 16

DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS..... 432.0000 3 144.0000

REGRESSION COEFFICIENTS

MEANS 0.0  
WITHIN 0.0  
TOTAL 0.0

F RATIOS FOR	DF
X MEANS	0.0 ( 3, 16)
Y MEANS	72.0000 ( 3, 16)
Y* MEANS	67.5000 ( 3, 15)
B WITHIN	0.0 ( 1, 15)

DIAGNOSTIC INFORMATION

LAMBDA= 0.0

THE APPROXIMATION USED IN THIS PROGRAM IS INAPPROPRIATE FOR THIS PROBLEM.  
THE CONFIDENCE LEVEL FOR LAMBDA IS NOT COMPUTED.

SUBSET SPECIFICATION

NO START END  
1 1 4  
2 5 5  
3 6 6  
4 9 11  
5 12 15

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HEALTH SCIENCES COMPUTING FACILITY, UCLA

COMBINATION NO 1

SUBSETS INCLUDED

1 2

ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES FREEDOM	SUMS OF SQUARES AND PRODUCTS		DEVIATION ABOUT REGRESSION		
		SS	XY	YY	DF	MEAN SS
MEANS	1	9544.9531	-7748.8750	6290.8750		
WITHIN	34	858.6875	1811.4375	13367.6875	33	254.4382
TOTAL	35	10443.6406	-5937.4375	19658.5625	34	
DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS				6566.5352	1	6566.5352

REGRESSION COEFFICIENTS

MEANS -0.8118  
WITHIN 2.0156  
TOTAL -0.5625

BIOASSAY INFORMATION

LAMBDA - -38.4929

CONFIDENCE LIMIT FOR LAMBDA - -22.5320

F RATIOS FOR		DF	
X MEANS	361.1138	1	34
Y MEANS	16.0005	1	34
Y* MEANS	22.3019	1	33
B WITHIN	12.4006	1	33

PHC01R - SIMPLE LINEAR REGRESSION - REVISED SEPTEMBER 2, 1968  
HEALTH SCIENCES COMPUTING FACILITY-UCLA

COMBINATION NO 2  
SUBSETS INCLUDED  
2 3 4 5

ANALYSIS OF COVARIANCE TABLE

SOURCE OF VARIATION	DEGREES FREEDOM	SUMS OF SQUARES AND PRODUCTS		DEVIATION ABOUT REGRESSION	
		SS	XY	SS	DF
MEANS	3	2143541.0000	617045.8750	263950.6875	3
WITHIN	58	1455026.0000	307788.0000	99446.8750	57
TOTAL	61	3618561.0000	924833.8750	363397.5625	60
DIFFERENCE FOR TESTING AMONG ADJUSTED MEANS		92689.1250		30856.3750	3

REGRESSION COEFFICIENTS

MEANS	0.2852	X MEANS	28.7477 ( 3, 58)
WITHIN	0.2115	Y MEANS	51.3143 ( 3, 58)
TOTAL	0.2556	Y MEANS	51.2657 ( 3, 57)
		B WITHIN	108.0744 ( 1, 57)

BIOASSAY INFORMATION

LAMBDA= 180.0306  
CONFIDENCE LIMIT FOR LAMBDA= 23.8759

BMD01V  
ANALYSIS OF VARIANCE FOR ONE-WAY DESIGN

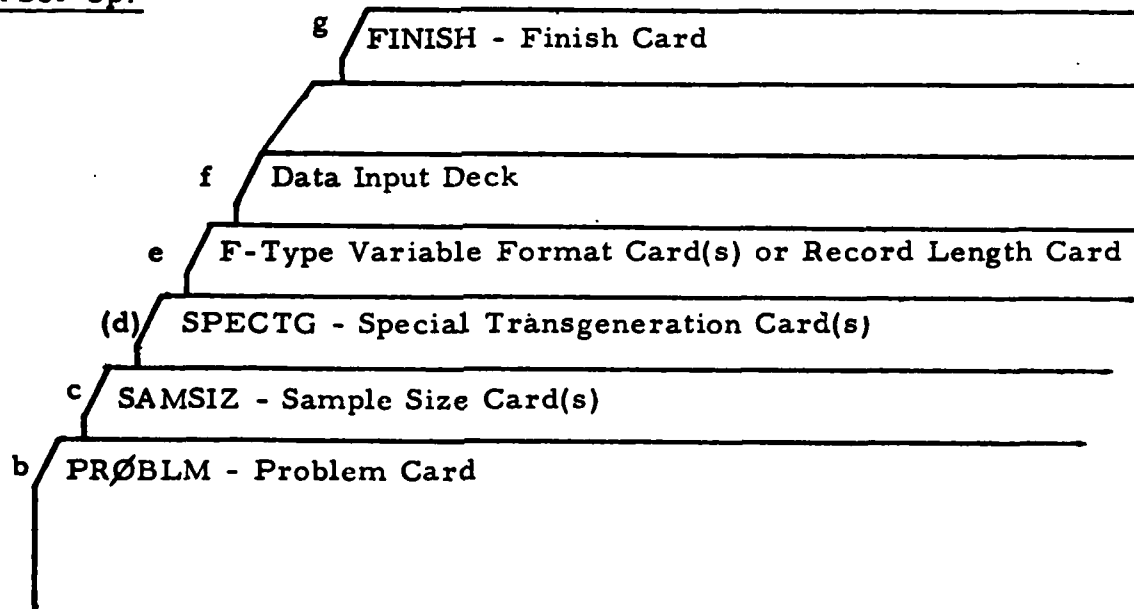
1. GENERAL DESCRIPTION

- a. This program computes an analysis-of-variance table for one variable of classification, with unequal group sample sizes. Optionally data may be read in from an alternate input tape, either in BCD or in binary mode. Rewinding of the tape before read-in is also optional.
- b. Output for this program includes:
- (1) Optional listing of the group or treatment means and standard deviations
  - (2) An analysis-of-variance table including:
    - (a) Within Groups, Between Groups, and Total Sums of Squares
    - (b) Within Groups, Between Groups, and Total Degrees of Freedom
    - (c) Within Groups and Between Groups Mean Squares
    - (d) F Ratio (for  $H_0: \mu_1 = \mu_2 \dots = \mu_k$ ).
- c. Limitations per problem:
- (1)  $k$ , the number of different groups or categories ( $2 \leq k \leq 5000$ )
  - (2)  $n_i$ , the number of observations or cases (sample size) for the  $i$ th treatment group or category ( $1 \leq n_i \leq 20000$ )
  - (3)  $N$ , the total number of observations in all groups or categories combined,
$$N = \sum_{i=1}^k n_i, (N \leq 100,000,000)$$
  - (4)  $m$ , the number of Special Transgeneration Cards ( $0 \leq m \leq 9$ )
- d. Estimation of running time and output pages per problem:
- Number of seconds =  $10 + k/30$  (for IBM 7094)  
Number of pages = 2 (add  $k/60$  if treatment means are to be listed)
- e. This program allows transgeneration. Codes 01-10 of the trans-generation list may be used.

## 2. ORDER OF CARDS IN JOB DECK

- a. System Cards [Introduction, IV]
- b. Problem Card
- c. Sample Size Card(s)
- (d.) Special Transgeneration Cards [Introduction, III-B]
- e. (1) F-type Variable Format Card(s) [Introduction, III-C]  
If data are on cards or on tape in BCD mode  
(2) Record-length Card  
If data are to be read from tape in binary mode
- f. DATA INPUT Cards [Introduction, II]  
(Place data input deck here if data input is from cards.)  
...  
Repeat b. through f. as desired.  
...
- g. Finish Card [Introduction, III]

### Deck Set-Up:



### 3. CARD PREPARATION (SPECIFIC FOR THIS PROGRAM)

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction.

#### b. Problem Card

Col. 1-6	PROBLM	(Mandatory)
Col. 7-12	Alphanumeric job code	
Col. 13-16	k	Number of treatment groups ( $2 \leq k \leq 5000$ )
Col. 17-19	YES	If listing of treatment group means and standard deviations is desired; otherwise, leave blank.
Col. 20	m	Number of Special Transgeneration Cards ( $0 \leq m \leq 9$ )
Col. 21-63	Blank	
Col. 64-66	YES	If data are to be read in binary mode from tape; otherwise, leave blank.
Col. 67, 68	NØ	If alternate input tape is not to be rewound before data are read in. If blank, the alternate input tape will be rewound before it is read.
Col. 69, 70	T	If data are to be read from alternate input tape T ( $T \neq 5, 6$ ). Leave blank if data are to be read from cards; in this case, Columns 64-66 and 67, 68 must also be blank.
Col. 71, 72	Number of F-type Variable Format Cards if data are to be read from cards or from an alternate BCD input tape ( $1 \leq f \leq 10$ ). If data are to be read in binary mode, leave blank.	

#### c. Record-length Card

If the data are to be read in binary mode (that is, if Columns 64-66 of the Problem Card contain YES), one Record-length Card must appear and no F-type Variable Format Cards.

Col. 1-3	Length of the logical records on binary tape
----------	--

#### d. Sample Size Card(s)

Col. 1-6 SAMSIZ (Mandatory)

Col. 7	Blank
--------	-------

**Col. 8-12**     $n_1$    Number of observations in the 1st group  
                     ( $1 \leq n_1 \leq 20000$ )

Col. 13-17  $n_2$  Number of observations in the 2nd group  
( $1 \leq n_2 \leq 20000$ )

...

Col. 67-72     $n_{13}$     Number of observations in the 13th group  
                       ( $1 \leq n_{13} \leq 20000$ )

If  $k > 13$ , additional Sample Size Cards are punched in the same manner; the second Sample Size Card would include  $n_{14}$  through  $n_{26}$ ; the third,  $n_{27}$  through  $n_{39}$ ; etc.

### e. DATA INPUT Cards

Data must appear on cards or on alternate input tape "group-wise"; that is, all  $n_1$  values in the first group or treatment must appear first; then, starting on a new card (or logical record, if input is from alternate BCD or binary tape), all  $n_2$  values in the second group, etc., so that the last  $n_k$  values on the cards or tape will be the  $n_k$  values in the  $k^{\text{th}}$  or last group. The format for all treatment groups is identical and is specified on the Variable Format Card.

#### 4. COMPUTATIONAL PROCEDURE

Let  $x_{ij}$  be the data value for the  $j^{\text{th}}$  case in the  $i^{\text{th}}$  treatment group.  
The means and sums of squares

$$\bar{x}_i = \frac{1}{n_i} \sum_{j=1}^{n_i} x_{ij} \quad i = 1, \dots, k$$

$$S_i = \sum_{j=1}^{n_i} (X_{ij} - \bar{X}_i)^2 \quad i = 1, \dots, k$$

are computed. If requested on the Problem Card the standard deviations

$$s_i = \sqrt{S_i / (n_i - 1)} \quad i = 1, \dots, k$$

are computed and printed together with the means. The following are computed and printed:

$$\begin{aligned}
 \text{Within Sum of Squares} &= S_w = \sum_{i=1}^k S_i \\
 \text{Within Degrees of Freedom} &= \sum_{i=1}^k (n_i - 1) = N - k \\
 \text{Within Mean Square} &= M_w = S_w / (N - k) \\
 \text{Between Sum of Squares} &= S_b = \sum_{i=1}^k n_i (\bar{X}_i - \bar{X})^2 \\
 &\quad - N \left( \frac{1}{N} \sum_{i=1}^k \sum_{j=1}^{n_i} X_{ij} - \bar{X} \right)^2 \\
 \text{Between Degrees of Freedom} &= k - 1 \\
 \text{Between Mean Square} &= M_b = S_b / (k - 1) \\
 \text{Total Sum of Squares} &= S_w + S_b \\
 \text{Total Degrees of Freedom} &= (N - k) + (k - 1) = N - 1 \\
 \text{F Ratio} &= M_b / M_w
 \end{aligned}$$

The computing formula for the Between Sum of Squares given above is mathematically equivalent to

$$S_b = \sum_{i=1}^k n_i (\bar{X}_i - \bar{X})^2$$

where

$$\bar{X} = \frac{1}{N} \sum_{i=1}^k \sum_{j=1}^{n_i} X_{ij}$$

## 5. REFERENCE

Dixon, Wilfrid J., and Massey, Frank J., Introduction to Statistical Analysis, Third Edition, McGraw-Hill 1969. Chapter 10.

```

PROBLEMVAR=12 12YES
SAMSIZ 38 3 17 32 11 19 24 61 30 3 48 60 1
(12F6.1)
464 060 1486 1022 1394 906 1179 -1501 -0690 1372 -0492 -1376
-1010 -0005 1393 -1787 -0105 -1339 1041 0279 -1805 -1186 0658 -0439
-1399 0199 0159 2273 0041 -1132 0768 0375 -0513 0292 1026 -1334
-0287 0161
-0852 0235 0E62
-0957 0525 -1855 -0035 0371 -0702 -0432 -0455 0120 -0238 -0869 -0273
-1016 0417 0056 0561 -0237
-0271 0932 -1029 0479 2709 -0057 -0300 -0594 -1047 -1347 0996 -1023
0551 0418 0074 0524 0479 0326 1114 1058 0772 0226 -0298 1064
0162 -0129 -1204 1057 -0916 1222 -1153 1298
0274 -0576 0957 -0686 0097 0269 0447 -0859 -0780 -1132 -1256
-1325 1284 0619 0659 0101 -1381 -0574 0096 1389 1249 0756 -0860
-0860 -0778 0037 2619 -0420 1048 1000 0170
2252 0554 -1203 -1210 0794 1001 0217 -3111 0354 0639 0317 0771
1303 -1326 -0676 0592 -0395 -0825 2362 1050 0298 -0726 -1483 -0224
-1752 -0291 -0923 -0450 0512 -0702 0284 -0509 -1776 -0044 0263 0986
-0441 -0866 -1215 -0475 1200 -0498 -0743 0779 -0206 -0092 -1222 0068
0182 -0811 -1010 1453 0759 0287 -0669 0392 -0337 0369 -1694 0985
-1063 0033 0597 -1601 -0266 0901 -1433 1327 -0248 -0401 0344 0441
0824 1385 -0329 0085 0130 -0244 -0882 0472 0039 1420 -1033 1807
-0578
-1210 0131 -1202 0894 -0780 -0195 -0927 -1582 0075 1600 -2904 1149
1210 -0838 0278 0035 0106 0199 -1990 0710 0340 -0594 -1527 0362
-0570 -1309 1531 -1008 0763 0798
-0679 -0324 -0372
-1084 0318 0367 -0992 0529 0278 1392 0409 0061 -0964 0507 -1414
-0947 -1191 0185 -0090 -0866 -1116 -0156 -1387 -0046 -0454 0575 -0266
1246 0557 0004 -1114 -0586 0882 0679 -0032 0091 0838 -0304 1082
-2716 0823 -1248 0346 -0537 -0402 1214 -1264 1353 1511 -0184 -0264
-0182 -0165 -0717 1407 -1060 -0192 0154 1278 2455 0524 -0445 0795
-1638 -0880 -0281 -1187 -0417 -1611 -0933 0490 -1117 0652 -0200 1751
0539 -1546 -0520 -0218 1169 -1543 -0930 1341 -1208 -1430 0449 -1225
0604 -0446 1353 -0024 0394 -0218 -0513 -0093 0474 2847 2315 -1212
-0049 0027 -0856 -0276 0039 1468 -1805 2295 -0602 0229 1382 0978

```

#### Problem Card

Problem VAR = 12

12 treatment groups, k

Treatment group means and  
standard deviations are desired.

1 F-type Variable Format Card

#### Sample Size Card

The sample sizes of the groups are:

$n_1 = 38$	$n_7 = 24$
$n_2 = 3$	$n_8 = 61$
$n_3 = 17$	$n_9 = 30$
$n_4 = 32$	$n_{10} = 3$
$n_5 = 11$	$n_{11} = 48$
$n_6 = 19$	$n_{12} = 60$

```

PROBLEM DEC=13 13YES
SAMPLE SIZE 38 3 17 32 11 19 24 61 30 3 48 60 32
( F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2 )
464 060 1486 1022 1394 906 1179 -1501 -0690 1372 -0482 -1376
-1010 -0005 1393 -1787 -0105 -1339 1041 0279 -1805 -1186 0658 -0439
-1399 0199 0159 2273 0041 -1132 0768 0375 -0513 0292 1026 -1334
-0287 0161
-0853 0235 0862
-0957 0525 -1865 -0035 0371 -0702 -0432 -0455 0120 -0238 -0869 -0273
-1016 0417 0056 0561 -0237
-0271 0932 -1029 0479 2709 -0057 -0300 -0594 -1047 -1347 0996 -1023
0551 0418 0074 0524 0479 0326 1114 1058 0772 0226 -0298 1064
0162 -0129 -1204 1097 -0916 1222 -1153 1298
0274 -0976 0957 -0686 0097 0269 0447 -0859 -0780 -1132 -1256
-1329 1284 0619 0699 0101 -1381 -0574 0076 1389 1249 0756 -0860
-0860 -0778 0037 2619 -0420 1048 1000 0170
2252 0554 -1203 -1210 0794 1001 0217 -3111 0354 0639 0317 0771
1303 -1326 -0676 0592 -0395 -0925 2362 1050 0298 -0726 -1483 -0224
-1752 -0291 -0933 -0450 0512 -0702 0234 -0509 -1776 -0044 0263 0986
-0441 -0866 -1215 -0475 1200 -0498 -0743 0779 -0206 -0092 -1222 0068
0183 -0811 -1010 1453 0759 0287 -0669 0392 -0337 0369 -1694 0985
-1063 0033 0597 -1601 -0266 0901 -1433 1327 -0248 -0401 0344 0441
0824 1385 -0329 0085 0130 -0244 -0832 0472 0039 1420 -1033 1807
-0570
-1210 0131 -1202 0894 -0780 -0195 -0927 -1582 0075 1600 -2904 1149
1210 -0838 0278 0035 0106 0199 -1990 0710 0340 -0594 -1527 0362
-0570 -1309 1531 -1008 0763 0788
-0675 -0324 -0372
-1084 0318 0367 -0592 0529 0278 1392 0409 0061 -0964 0507 -1414
-0847 -1191 0185 -0090 -0866 -1116 -0155 -1387 -0046 -0454 0575 -0266
1246 0557 0004 -1114 -0586 0882 0679 -0032 0091 0838 -0304 1082
-2716 0823 -1248 0346 -0537 -0402 1214 -1254 1353 1511 -0184 -0264
-0182 -0165 -0717 1407 -1060 -0192 0154 1278 2455 0524 -0445 0795
-1638 -0880 -0281 -1187 -0417 -1611 -0983 0490 -1117 0652 -0200 1751
0535 -1545 -0520 -0218 1169 -1543 -0930 1341 -1208 -1430 0449 -1225
0604 -0446 1353 -0024 0394 -0218 -0513 -0393 0474 2847 2315 -1212
-0049 0027 -0856 -0276 0039 1468 -1905 2295 -0602 0229 1382 0978
-0678 -0366 -1074 -0600 0918 -0791 0598 0567 0963 0489 -1627 -1096
-2532 0024 0192 -1324 -0726 -1618 1695 0790 1792 0771 -1438 -0294
-1966 -0999 0581 0370 0834 -0376 -1621 0153
FINISH

```

#### Problem Card

Problem DEC = 13

13 treatment groups, k

Treatment group means and  
standard deviations are desired.

2 F-type Variable Format Cards

#### Sample Size Card

The sample sizes of the first 12  
groups are the same as in the  
previous problem;  $n_{13} = 32$ .

ANNO IV - ANALYSIS OF VARIANCE FOR ONE-WAY DESIGN - REVISED JANUARY 5, 1972  
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CODE VAR=12  
NUMBER OF TREATMENT GROUPS 12  
NUMBER OF VARIABLE FORMAT CARDS 1  
DATA INPUT TAPE 5

THE VARIABLE FORMAT  
(12F6.1)

TREATMENT GROUP	1	2	3	4	5	6	7	8	9	10	11	12
SAMPLE SIZE	38	3	17	32	11	19	24	61	30	3	48	60
MEAN	0.4158	0.1333	-29.6411	19.1958	-33.1363	24.7125	5.5525	-10.6376	-21.5499	-45.8333	-8.9103	2.1834
STANDARD DEVIATION	105.6037	86.7765	64.6698	93.6238	75.4526	107.1424	124.1842	86.4095	109.7837	19.2604	90.5390	111.7597

ANALYSIS OF VARIANCE

	SUM OF SQUARES	DF	MEAN SQUARE	F RATIO
BETWEEN GROUPS	77396.6625	11	7036.0039	0.7110
WITHIN GROUPS	3105029.0000	334	9895.2933	
TOTAL	3382425.6600	345		

PMDDIV - ANALYSIS OF VARIANCE FOR ONE-WAY DESIGN - REVISED JANUARY 5, 1972  
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CODE DEC-13  
NUMBER OF TREATMENT GROUPS 13  
NUMBER OF VARIABLE FORMAT CARDS 2  
DATA INPUT TAPE 5  
THE VARIABLE FORMAT  
1 F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2, F6.2,  
F6.2, F6.2 1

TREATMENT	SAMPLE SIZE	MEAN	STANDARD DEVIATION
1	38	0.64158	10.56037
2	3	0.81333	8.67765
3	17	-2.96411	6.46697
4	32	1.91968	9.36209
5	11	-3.31363	7.54525
6	19	2.47105	10.71424
7	24	0.55625	12.41843
8	61	-1.06376	8.64095
9	30	-2.15499	10.97838
10	3	-4.58333	1.92634
11	48	-0.89104	9.05391
12	60	0.21834	11.17594
13	32	-2.61843	10.88173

ANALYSIS OF VARIANCE			
	SUM OF SQUARES	DF	MEAN SQUARE
BETWEEN GROUPS	919.7546	12	76.6462
WITHIN GROUPS	36721.6625	365	100.6055
TOTAL	37640.8164	377	
			F RATIO
			0.7618

**END**

**FILMED**

**6-83**

**DTIC**